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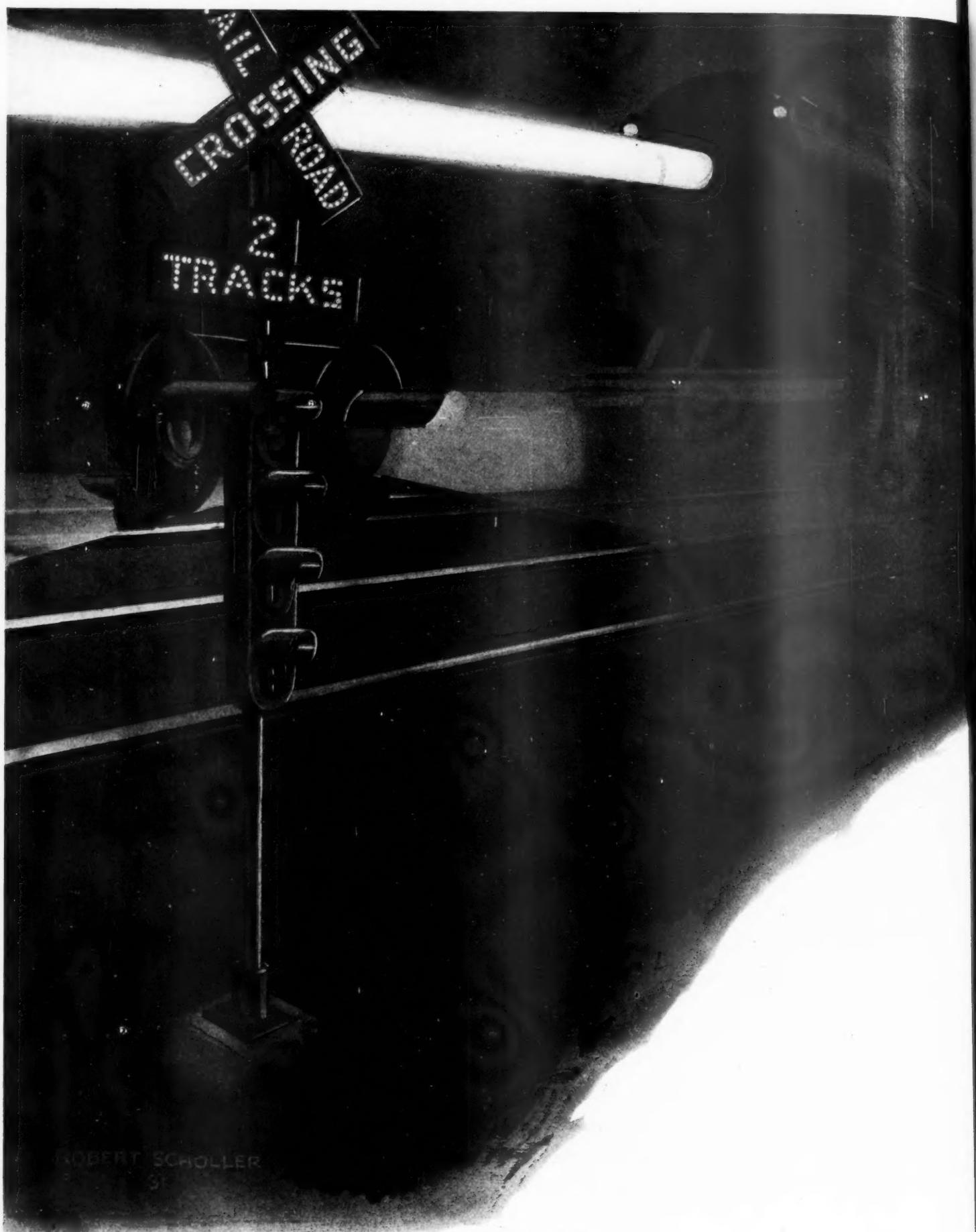
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Mythical Savings on Inland Waterways

The movement for future large government expenditures upon rivers and canals has been supported by the citation of huge savings in transportation costs claimed to have resulted from past expenditures upon waterways. The late Secretary of War Good, in a widely-quoted address made shortly before his death, stated that the total expenditures upon waterways in this country had been about \$1,500,000,000, and were resulting in an annual saving in transportation costs of about \$500,000,000 annually. Soon afterward his successor, Secretary of War Patrick J. Hurley, stated, in another widely-quoted address, that the annual saving in transportation costs was about \$600,000,000. In an article that appeared in the Harvard Business Review of January, 1931, Major General Lytle Brown, chief of engineers of the United States Army, repeated the statement made by Secretary Hurley.

The *Railway Age* has long believed that the use of these figures as an argument for expenditures upon rivers and canals was wholly misleading, because this paper has suspected that the bulk of the estimate of an annual saving of 600 million dollars was arrived at by computations based upon differences between freight rates on the ocean and the Great Lakes, on the one hand, and on the railways, on the other hand. The ocean and the Great Lakes were made wide and deep by nature, and can carry ships of great draft, and they have nothing in common with shallow and narrow inland rivers and canals excepting that they all have water in them. No person ever has questioned that the cost of transportation upon the ocean and the Great Lakes is naturally and inevitably much less than by railroad. No person ever has questioned the economic justification of public expenditures to deepen and enlarge the harbors of these deep waterways, or even to construct short canals connecting them.

A Waterway "Deadly Parallel"

The cost of transportation upon them, however, is no measure whatever of what the cost is or ever will be on rivers and canals, and therefore statistics regarding "savings in transportation costs" resulting from government expenditures upon the harbors of the ocean and the Great Lakes have no bearing whatever upon

the expediency of expending large amounts of the taxpayers' money upon rivers and canals.

Suspecting that the way in which the statistics heretofore quoted were being used was misleading, the *Railway Age* on February 21 sent a letter to General Brown saying, "the present controversy relates entirely to the economic justification of expenditures to improve rivers and construct canals", and asking him to furnish figures regarding the expenditures that have been made upon rivers and canals, exclusive of short canals connecting deep waterways, and "the estimated annual savings in transportation costs resulting from the improvements in rivers and the construction of canals."

In an article appearing elsewhere in this issue we quote statements made by General Brown in his article in the Harvard Business Review, the letter of inquiry written to him by the *Railway Age*, and the letter written by General Brown in reply to the inquiries made by the *Railway Age*. In parallel columns herewith we quote extracts from General Brown's article and from his letter to the *Railway Age* which summarize the statements made by him in both of them regarding the savings in transportation costs resulting from government expenditures upon waterways. (The italics used are ours.)

From General Lytle Brown's article in the Harvard Business Review, of January, 1931.

From General Lytle Brown's letter of April 3 to the *Railway Age*.

"There has been expended up to June 30, 1929, upon the entire system, including harbors, *canals and inland rivers*, a total in round numbers of \$1,500,000,000. * * * It has been conservatively estimated, from careful studies of traffic movements and rail and water rates on important commodities, that the saving in transportation costs, due to the improved channels in our harbors, *canals and inland waterways*, amounts to something like \$600,000,000 annually."

"This department has not prepared an estimate of the annual savings in transportation costs resulting from the improvement in rivers and the construction of canals. The estimate of the saving in transportation * * * to which you refer was based on a study * * * of the most important of the water transportation systems, including the Great Lakes and the sea-coast harbors. It did not, in point of fact, include the estimated savings of the inland waterway transportation system, this for the reason that such system is in a development status."

The inconsistency between the statements quoted in

the two parallel columns is plain. In his article in the Harvard Business Review, General Brown, like Secretaries Good and Hurley in their addresses, gave the total expenditures that have been made upon harbors, *canals and inland rivers*, and then, by referring to the estimated saving of \$600,000,000 annually in transportation costs as "due to the improved channels in our harbors, *canals and inland waterways*", undoubtedly gave to every uninformed reader the impression that a large part of the estimated saving is being made upon "canals and inland rivers". In his letter to the *Railway Age*, however, General Brown says that his estimate of a \$600,000,000 annual saving "was based on a study * * * of the most important of the water transportation systems, including the Great Lakes and the sea-coast harbors," and "did not, in point of fact, include the estimated savings of the inland waterway transportation system."

In other words, savings in transportation costs made *entirely* upon the ocean and the Great Lakes, and chiefly due to nature, were so referred to by General Brown, and have also been so mentioned by Secretary Hurley, General Ashburn, and other waterway advocates in government service and private life, as to influence public sentiment to favor large expenditures upon rivers and canals upon which there is not the remotest possibility of effecting such savings in transportation costs as have been made possible by nature on the Great Lakes and the ocean.

The Case of Rivers and Canals

What have been the "savings in transportation costs" upon rivers and canals alone? In his reply to the request of the *Railway Age* for this information, General Brown sent us a list of 343 projects, of which 148 are shown by his own figures to have been completed, but he estimates the savings made upon only two rivers, and excuses himself from making other estimates upon the ground that "the inland water transportation system * * * is in a development status". He estimates savings of \$13,000,000 a year on the Monongahela river, but, as was stated in the "Interim Report" of the Board of Engineers to which he refers, the Monongahela has an "exceptionally convenient system of traffic", including "river bank mines from which coal can be delivered without rail haul", and \$11,000,000, or 85 per cent, of the estimated savings on the Monongahela was made on coal from these "river bank mines". General Brown concedes that there was a "small deficit" in 1925 on the Ohio, the other river the savings on which he mentions, but intimates that as a result of an increase of traffic this deficit has been wiped out. The Bureau of Railway Economics has shown, however, that on the basis of 1928 traffic the average cost of moving a ton of freight on the Ohio river, between points 100 miles apart by rail, was \$1.25, of which the public paid 65 cents in taxes and only 60 cents was paid in rates, while the average revenue derived by the railways in the same territory from moving a ton of freight the same distance was only 88.3 cents.

What, then, is the case for large future expenditures upon canals and inland rivers? The estimated saving of \$600,000,000 a year in transportation costs mentioned by Secretary Hurley, General Ashburn, General Brown, and other waterway advocates in government service and private life, constitutes no part of the case because this estimated saving was made entirely on the Great Lakes and the ocean. Surely well-informed waterway advocates will never again refer to this saving as being "due to the improved channels in our harbors, *canals and inland waterways*" when to so refer to it is so plain a misrepresentation. Excepting the Monongahela and Ohio rivers, no estimates of savings on the 148 completed inland river and canal projects can be obtained from the highest official source, and therefore there is no real basis in experience for the claims made as to savings that will result from future expenditures upon canals and rivers.

Waterways and "Increased Commerce"

"The large sums which are being spent at the present time on inland waterways find their justification in the increased commerce that is expected to result from such development," says General Brown. But if, as the available evidence indicates, the total cost of transportation upon practically all inland rivers and canals is and will continue to be greater than by rail, obviously the development of inland waterways will not cause as great an increase in commerce as would the development of railways. The Board of Army Engineers has estimated that it will cost \$124,000,000 to deepen the Mississippi river to nine feet from Grafton, Ill., to the Twin Cities. The distance by railway is about 700 miles. Therefore, the estimated cost, based on the railway mileage, will be \$180,000 a mile, without including the cost of terminals and boats. The average investment in the railways in the United States on December 31, 1929, including all equipment and freight and passenger terminals, was only \$103,097. The railways now paralleling the upper Mississippi can carry freight at a much lower total cost than it can ever possibly be carried on the upper Mississippi. How will it increase commerce to duplicate existing means of transportation, in this territory, which are fully adequate, with a much more expensive means of transportation?

There is no case for large expenditures upon inland canals and rivers based either upon past experience or reliable estimates of future results. The inland waterway movement is dependent for its success upon a tissue of misrepresentations and of fallacious arguments based upon these misrepresentations. The claim of a \$600,000,000 annual saving of transportation costs, stated in such a way as to imply that a large part of the saving is made upon inland canals and rivers, when not a cent of it is made upon them, is the most glaring of these misrepresentations; but there are plenty of others. How long will the public continue to allow itself to be influenced to tax itself for the development of a means of transportation for which there is absolutely no economic justification?

Railroad Credit and General Business

Benjamin Baker, editor of the New York Times Annalist, in his leading article in that publication last week decried reduction by the New York Federal Reserve Bank of its rediscount rate as a stimulus to easier credit. The "chief anxiety of the owners of capital at present," he said, "is not the rate of interest on their capital but the safety of the principal itself". It is not necessary to form any opinion regarding the rediscount policy to recognize the obvious truth of the statement regarding the concern of the owners of capital for the safety of their principal.

No one who follows the market can fail to see that this anxiety regarding dollars invested in railroad securities—not only stocks, but bonds as well—has been increasing alarmingly. It is all very well to say that investors are unduly timorous and that business will soon revive, bringing a sharp upturn in earnings. This mere statement is not enough. Other indications are needed to give confidence to the investor. And it is precisely this lack of confidence which is curtailing expenditures and prolonging the depression. In an industrialized country such as this where economic interdependence has attained such a great degree of complexity it is impossible to impress holders of the purse strings with the belief that the security of their greatest industry is in danger and, at the same time, expect them to show confidence in general business.

Colonel Leonard Ayres of the Cleveland Trust Company, one of our best known observers of financial affairs, places the revival of confidence in railway earnings high in the list of pressing national problems. His view is shared by many others. Some even hold the opinion that the present situation with regard to the railways alone is sufficient to account for the persistence of the depression and that positive assurance of early betterment in railway earnings would be sufficient in itself to start a general business revival.

To question whether improving railroad credit is the most important national economic problem or merely one of the most important, however, is academic. Its vital importance is, at any rate, conceded by all whose opinions on such matters are usually accorded weight. Moreover, it is a national problem and not one of the railroad industry alone. This being the case, what are national leaders going to do about it?

Two great commercial organizations—the United States Chamber of Commerce and the Associated Traffic Clubs of America—have gone on record as advocating an impartial analysis of our transportation problem. What do other business and financial leaders think about this subject? What do our statesmen and political leaders think about it? Are they willing to contribute their efforts toward finding the facts and—once these facts are determined—take such action, legislative and otherwise, as is designed to protect and develop our national transportation system? If so,

then let them say so. The railways' case can stand on its merits before any group of fair-minded men. The assurance that such a group would consider their case and that the findings would result in rapid remedial action would go far toward reviving confidence.

Truck Competition Can Be Defeated

Out of all the variety of plans now being tried by the railways, a means will be found of meeting the challenge of competitive motor trucks and of regaining for the railways, that traffic which they, of all the transportation agencies, are best equipped to handle. This conclusion is the inescapable result of extended study of the experiments in improving freight service, which are now being made by the railways, and of the outcome of those experiments to date.

Truck competition has had a seriously depressing effect upon railway freight revenues. The injury is not, however, irreparable. The railways perhaps were slow to recognize the seriousness of the situation, but it must be remembered that few if any of the most enthusiastic advocates of truck transportation would have predicted even a few years ago the present magnitude of the highway transportation machine. Furthermore, the railways, because of the regulatory restrictions to which they are subject, are not so free as they might be to meet competition where they find it.

In spite of these handicaps, successful efforts to regain traffic have been made by a number of roads. Although the methods of these roads have differed, their accomplishments have been much alike. The method of the Spokane, Portland & Seattle, the operations of whose subsidiary, the Northwest Freight Transport Company, are described in this issue, is the one which has been more generally used by western railways than any other. Originated by the Southern Pacific, this plan has found favor with several other western and southwestern lines. Furthermore, judging from traffic reports, it has found favor with shippers. For example, the combined merchandise tonnage from Portland, Ore., of the Spokane, Portland & Seattle and its subsidiary, the Northwest Freight Transport Company, in March, 1931, was 81 per cent greater than the merchandise tonnage handled by the railway alone in March, 1930.

Serious though the situation is with respect to truck competition, there is ample basis for the expectation that this railway problem will be solved. From the present experiments the railways will develop plans of railway and highway co-ordination which should have three effects: The return to rail transportation of traffic to which rail transportation offers the best service; the retention by motor trucks of traffic which they are best fitted to handle; and the elimination of waste motion in, and the reduction of expenses incidental to, the movement of freight.

How Long Should A Hopper Car Last?

A discussion of the relation that maintenance policies and materials should bear to the average cost of car life

By H. R. Rice

General Shop Inspector, Car Department, New York, Chicago & St. Louis

THE maintenance of steel hopper cars presents a problem that has been approached by a variety of methods on the railroads of the United States and while there seems to be a wide diversity of opinion as to the best policy to pursue in maintaining this type of equipment it will be found, upon analysis, that most roads follow some slight variation of one of three practices that form the basis of this discussion. In an endeavor to determine which of these practices, if any, is the most economical to follow and to determine what materials of construction and repair should be expected to render the best service, the figures which are embodied in this paper were prepared.

The object in making such an analysis was suggested by the possibility that car designers might use different kinds or weights of materials in different parts of a hopper car so as to adapt that section of the car to the wear which service naturally imposed upon it.

In order to arrive at some basis of comparison, it was decided to select an arbitrary design of car and consider only the actual direct labor and material involved in the original construction and subsequent repair of the car, eliminating from the discussion such questions as depreciation and retirement accounting and the credits due to scrap or reclamation of material.

All of the figures which follow are based on an imaginary 55-ton, all steel, twin-hopper car having a light weight of 38,000 lb. While the figures are for this type of car alone, it is possible that the general comparisons would work out equally well in connection with any steel car.

For comparative purposes I have set up three practices which I understand are followed on different roads in making repairs to cars as well as in building new equipment.

These practices are:

1—That of building a body of 3/16-in. plates with the idea of getting a definite service life from the body, discarding it in its entirety at the end of that time and providing an entirely new body for replacement.

2—That of building a body of 1/4-in. plates and renewing the parts as they fail. In hopper cars the floor, cross hood, hopper and other bottom sheets would fail some time before the side and end or other top sheets.

3—That of building a body of 5/16-in. plates for bottom sheets and 1/4-in. plates for side and end sheets so that the limit of economical service life of all parts would be reached at about the same time.

With these ideas in mind I made a hasty investigation to determine what material was being used in the way of plates and found that three items were more or less prominent—open-hearth steel, copper-bearing steel and commercially pure iron or iron alloys.

Open-hearth shapes seem to be satisfactory for frame members and I have used a figure of 5,000 lb. of open-hearth shapes in a 55-ton hopper. The figures for plates are approximate for a car of this kind, based on

the thickness of the plates, and the prices are approximately the current prices for such material. None of the costs give any consideration to trucks, draft attachments, brake equipment or special devices.

I have set up comparisons using each of three kinds of material based on the estimated average service life of each material. This estimate may be far off from the actual life and if so the comparisons are worthless but they are the best figures that I could obtain at this time. The estimate of service life is an average of the opinions of a number of people as a result of their observations and upon actual service records of the different materials.

In the first comparison practice No. 1 is used. I would like to call attention to the "fabrication" and "application" item shown; this figure is arbitrary and is based on a per-pound basis.

Practice No. 1

A—Body to be built of open-hearth shapes and 1/16-in. open-hearth plates with estimated life of 10 years for plates.

6,750 lb. plates @ \$1.85 per 100 lb.	\$125.00
5,000 lb. shapes @ 1.65 per 100 lb.	83.00
Rivets	15.00
Fabrication and application	294.00

Cost of body..... \$517.00
Cost per year..... 52.00

B—Body to be built of 1/16-in. copper-bearing plates and open-hearth shapes with estimated life of 13 years.

6,750 lb. plates @ \$2.00 per 100 lb.	\$135.00
5,000 lb. shapes @ 1.65 per 100 lb.	83.00
Rivets	15.00
Fabrication and application	294.00

Cost of body..... \$528.00
Cost per year..... 41.00

C—Body to be built of 1/16-in. iron plates and open-hearth shapes with estimated life of 15 years.

6,750 lb. plates @ \$2.40 per 100 lb.	\$162.00
5,000 lb. shapes @ 1.65 per 100 lb.	83.00
Rivets	15.00
Fabrication and Application	294.00

Cost of body..... \$554.00
Cost per year..... 37.00

It is evident that, in handling repairs in the manner outlined above, the cars would have to be depreciated rapidly or else the operating charges at retirement would be extremely high.

The second comparison covers practice No. 2 and is carried through the life of the first renewal after the original life of the car body.

Practice No. 2

A—Body to be built of open-hearth shapes and 1/4-in. open-hearth plates with estimated life of 10 years for bottom plates and 12 years for top plates.

First body	9,000 lb. plates @ \$1.65 per 100 lb.	\$149.00
	5,000 lb. shapes @ 1.65 per 100 lb.	83.00
	Rivets	15.00
	Fabrication and application	350.00

Cost of body..... \$597.00
First life cost year..... 54.00

* A paper presented at a meeting of the Railway Club of Greenville (Pa.) March 17, 1931.

First renewal of bottom parts, 10 years	5,000 lb. plates @ \$1.65 per 100 lb..... 750 lb. shapes @ 1.65 per 100 lb..... Rivets Fabrication and application.....	\$83.00 12.00 6.00 144.00
First renewal of top parts, 12 years	4,000 lb. plates @ \$1.65 per 100 lb..... 500 lb. shapes @ 1.65 per 100 lb..... Rivets Fabrication and application.....	\$245.00 \$70.00 8.00 6.00 110.00
	Cost of first renewals..... Renewal cost per year..... Average cost per year.....	\$194.00 \$439.00 40.00 47.00
First body	9,000 lb. plates @ \$1.80 per 100 lb..... 5,000 lb. shapes @ 1.65 per 100 lb..... Rivets Fabrication and application.....	\$162.00 83.00 15.00 350.00
	Cost of body..... First life cost per year.....	\$610.00 42.00
First renewal of bottom parts, 13 years	5,000 lb. plates @ \$1.80 per 100 lb..... 750 lb. shapes @ 1.65 per 100 lb..... Rivets Fabrication and application.....	\$90.00 12.00 6.00 144.00
First renewal of top parts, 16 years	4,000 lb. plates @ \$1.80 per 100 lb..... 500 lb. shapes @ 1.65 per 100 lb..... Rivets Fabrication and application.....	\$252.00 \$72.00 8.00 6.00 110.00
	Cost of renewals..... Renewal Cost per year..... Average cost per year.....	\$196.00 \$448.00 31.00 36.00

B—Body to be built of open-hearth shapes and $\frac{1}{4}$ -in. copper-bearing plates with estimated life of 13 years for bottom plates and 16 years for top plates.

First renewal of top parts, 18 years	4,000 lb. plates @ \$2.30 per 100 lb..... 500 lb. shapes @ 1.65 per 100 lb..... Rivets Fabrication and application.....	\$92.00 8.00 6.00 110.00
	Cost of renewals.....	\$216.00
	Renewal cost per year.....	\$493.00
	Average cost per year.....	30.00

There are additional costs in connection with this practice that are not developed in this comparison due to frequent shopping periods. There will also be duplicated labor and material costs caused by overlapping parts being removed at different shopping periods to facilitate repairs.

The third comparison covers practice No. 3 and is carried through the life of the first renewal only after the life of the original car body.

Practice No. 3

A—Body to be built of open-hearth shapes and plates. Bottom plates, $\frac{5}{8}$ -in. and tops, $\frac{1}{4}$ -in. Estimated life 12 years.

First body	10,200 lb. plates @ \$1.65 per 100 lb..... 5,000 lb. shapes @ 1.65 per 100 lb..... Rivets Fabrication and application.....	\$168.00 83.00 15.00 380.00
	Cost of body..... First life cost per year.....	\$646.00 54.00
First renewal	10,200 lb. plates @ \$1.65 per 100 lb..... 1,250 lb. shapes @ 1.65 per 100 lb..... Rivets	\$168.00 21.00 12.00

	New	First renewal		Second renewal		Summary: 36 years \$1720 total Average \$47 a year
		12	Years	24	Years	
2-A	Top					Years
	Bottom	10	Years	20	Years	Unused life
		\$597	First renewal \$245	Second renewal \$245	Third renewal \$245	40 Years
	New	First renewal		Second renewal		Summary: 36 years \$1506 total Average \$42 a year
		16	Years	32	Years	
2-B	Top					Years
	Bottom	13	Years	26	Years	Unused life
		\$610	First renewal \$252	Second renewal \$252	36 Years	39 Years
	New	First renewal		Second renewal		Summary: 36 years \$1425 total Average \$39 a year
		18	Years	36	Years	
2-C	Top					Years
	Bottom	15	Years	30	Years	Unused life
		\$655	First renewal \$277	Second renewal \$277	36	45 Years

Chart of Service and Costs in Practice No. 2

C—Body to be built of open-hearth shapes and $\frac{1}{4}$ -in. iron plates with estimated life of 15 years for bottom plates and 18 years for top plates.

First body	9,000 lb. plates @ \$2.30 per 100 lb..... 5,000 lb. shapes @ 1.65 per 100 lb..... Rivets Fabrication and application.....	\$207.00 83.00 15.00 350.00
	Cost of body..... First life cost per year.....	\$655.00 40.00
First renewal of bottom parts, 15 years	5,000 lb. plates @ \$2.30 per 100 lb..... 750 lb. shapes @ 1.65 per 100 lb..... Rivets Fabrication and application.....	\$115.00 12.00 6.00 144.00
		\$277.00

Fabrication and application.....	287.00
Renewal cost	\$488.00
Renewal cost per year.....	40.00
Average cost per year (over entire period)	47.00

B—Body to be built of open-hearth shapes and copper-bearing plates. Bottoms, $\frac{5}{8}$ in. and tops, $\frac{1}{4}$ in. Estimated life 16 years.	10,200 lb. plates @ \$1.80 per 100 lb..... 5,000 lb. shapes @ 1.65 per 100 lb..... Rivets Fabrication and application.....	\$184.00 83.00 15.00 380.00
	Cost of body..... First life cost per year.....	\$662.00 41.00

First renewal	10,200 lb. plates @ \$1.80 per 100 lb.....	\$184.00
	1,250 lb. shapes 1.65 per 100 lb.....	21.00
	Rivets	12.00
	Fabrication and application.....	287.00
	Renewal cost	\$504.00
	Renewal cost per year.....	31.00
	Average cost per year.....	36.00
First body	10,200 lb. plates @ \$2.30 per 100 lb.....	\$235.00
	5,000 lb. shapes @ 1.65 per 100 lb.....	83.00
	Rivets	15.00
	Fabrication and application.....	380.00
	Cost of body	\$713.00
	First life cost per year.....	39.00
First renewal	10,200 lb. plates @ \$2.30 per 100 lb.....	\$235.00
	1,250 lb. shapes @ 1.65 per 100 lb.....	21.00
	Rivets	12.00
	Fabrication and application.....	287.00
	Renewal cost	\$555.00
	Renewal cost per year.....	31.00
	Average cost per year.....	35.00

Summary of Costs

The average costs developed by the three practices on a yearly basis are as follows:

Practice No.	Annual Cost			
	Original Body	First Renewal	Second Renewal	36-year Period
1 A	\$52.00
B	41.00
C	37.00
2 A	54.00	\$40.00	\$47.00	\$47.00
B	42.00	31.00	36.00	42.00
C	40.00	30.00	35.00	39.00
3 A	54.00	40.00	47.00	45.00
B	41.00	31.00	36.00	36.00*
C	39.00	31.00	35.00	35.00

* 30-year period.

It would appear that practice No. 1 is expensive. There is a fixed loss of service life because of the loss of life in frame parts that are scrapped with worn

ditional labor and material costs which will arise because of duplication of labor and material due to the frequent shoppings. The advantages of practice No. 3 over practice No. 2 are more clearly set up later.

I do not know of any yard stick by which the limit of general car life may be measured. Heretofore truck and underframe construction has been, to a considerable extent, the governing factor. We had a pretty fair idea of the life of car parts with the old designs but the rapidity with which obsolescence of certain car parts is taking place makes it rather hard to make any future estimates. We have comparatively new A.R.A. designs for all car parts. We cannot say whether these parts will last for 35 years or 40 years, or whether they may become obsolete in 15 years or less.

In making these comparisons it was necessary to establish a limit for the life of the car body. This limit now seems to be based more or less on center-sill construction. In view of the life of steel sills in some of the older equipment it does not seem unreasonable to assume that the A.R.A. section will last 36 years and using this as a basic figure I have set up some charts showing what happens in the way of renewals if practices No. 2 and No. 3 are followed for a 36-year period.

Explanation of Charts

In the chart for practice No. 2A it will be noticed that the tops have the original application and two renewals for an exact 36-year period. The bottoms have the original application and three renewals with a loss of four years' unused life in the bottoms at the expiration of the 36-year period. Practice 2B has the original application and two renewals for the tops and a loss of 12 years' unused life at the expiration of the

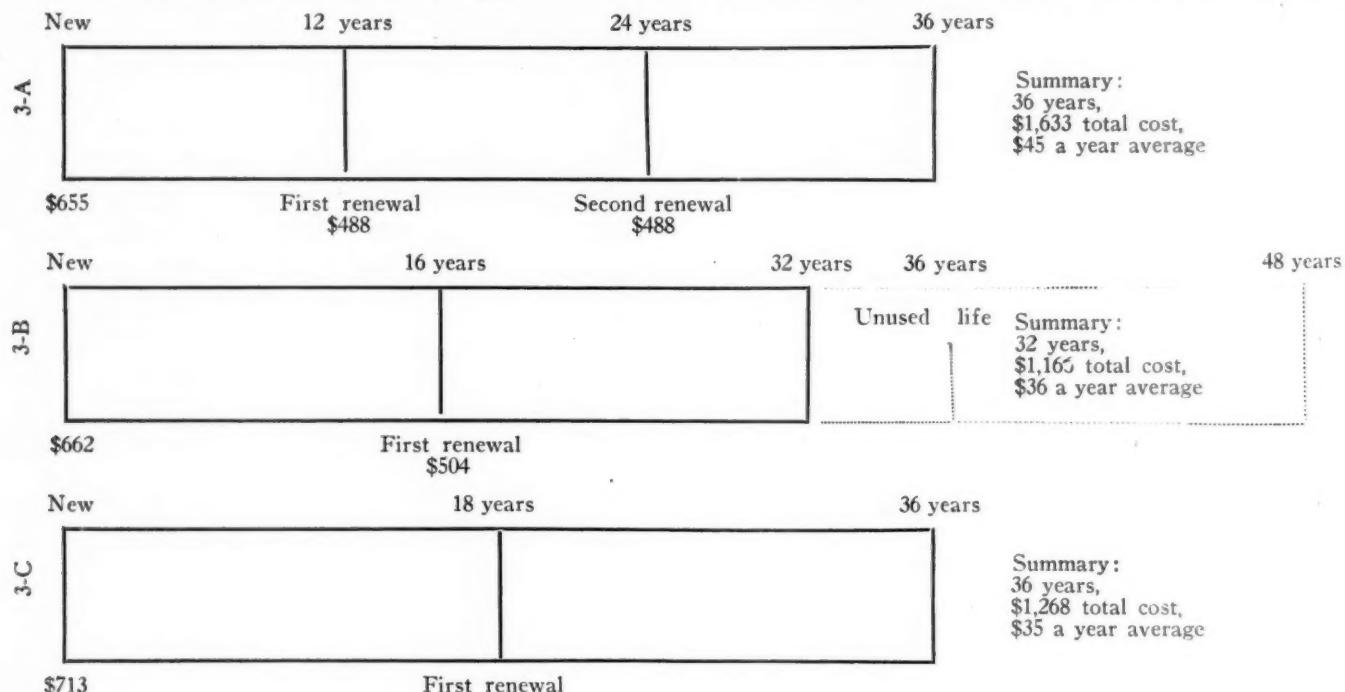


Chart Illustrating Service and Costs in Practice No. 3

out plates and I can see no way by which these costs can be lowered unless the frame work is lightened to a considerable extent. If this were done it is possible that there would be considerable maintenance cost during the body life because of weak car construction.

Without some study practice No. 2 seems to be equal to No. 3. This is not correct if proper charges are made for loss of availability of equipment while in shop twice in each service life after the first and for ad-

36-year period while the bottoms have an original application and two renewals with a loss of three years' unused life over the same period. Practice 2C has the original application and one renewal for 36 years' life of the tops while the bottoms have the original application and two renewals with nine years' unused life over the same period.

Practice 3A has an original application and two renewals for an exact life of 36 years. Practice No. 3B

has an original application and one renewal for a life of 32 years or an additional renewal and a loss of 12 years' unused life over the 36-year period. Practice No. 3C has an original application and one renewal for an exact life of 36 years.

These charts illustrate more clearly the advantages of practice No. 3 over that of practice No. 2 than could any other argument. It certainly demonstrates that a material should be selective with a view of securing a definite service life. If the estimates of service life are at all correct the answer to lower car maintenance costs is in the designer's hands.

A question in relation to trucks and other parts might be raised in connection with long life. Should there be any consideration given to other parts providing the cars are of standard construction and the other parts interchangeable?

Conclusion

Some 15 years ago I helped build a concrete gondola and I told a friend of mine that the carman of the future would have to drag a concrete mixer around with him. The development of the concrete car has not been very rapid but we are hearing a lot about cast-steel underframes and cast-steel superstructures not to mention the use of aluminum alloy castings and shapes. Perhaps the time is coming when the manufacturers of the present non-ferrous metals may be able to produce plates at figures which will permit general use in freight car construction and thereby provide important competition to the ferrous materials.

We do not have to be very old to remember back to the days when steel cars were new and we can recall a lot of changes that have taken place in steel car construction since that time. The next 20 years may produce more radical changes than have the past 20 years so far as car materials and designs are concerned.

It is possible that the days of the riveted car are numbered. Welding is displacing riveting to a considerable extent and we are beginning to see welded cars. We are all familiar with the fact that a great deal of corrosion starts at rivet heads and welding may prolong car life to some extent by eliminating the rivet heads.

Where it will all end is hard to say but I do know that the car department men must keep on top of the pile and not permit prejudice to blind them to the march of progress.

In closing I want to say that the principal intent of this paper is to start a discussion with relation to methods and materials to be used in freight car construction and repair.

I want particularly to emphasize the fact that the information in this paper bears no relation whatever to the practices of the road with which I am connected. We do not happen to follow any of the three practices outlined in maintaining our equipment.

Discussion

R. C. Beaver (Bessemer & Lake Erie): There is always considerable discussion on the subject of the best policy to follow in car maintenance. We read it in the trade papers and we hear it at club meetings. Mr. Rice's paper shows just what can be done when you get down to a logical and systematic analysis of the problem. While the periods of service life and costs used by Mr. Rice may be subject to some modification, I do not think the comparative results would be changed very much, and the method of analysis seems to be all right.

Mr. Rice has brought out considerations of the kind

and thickness of material in cars as related to car maintenance. There are, however, some other features which have an important bearing on car design that should be considered.

One of these is the matter of extra weight in cars, and, as it seems to me that this is a matter of first importance, I would like to enlarge upon it. Certainly the matter of weight is important from an operating standpoint. We are interested in the over-all cost of operating a car. If the operating cost can be reduced, even at the expense of maintenance, it should be done, provided we do not go too far.

Years ago, not so much attention was paid to excess weight, when cars were loaded to marked capacity or 10 per cent over marked capacity. But now since we are following Rule 86, which allows us to go to the axle limit, every pound of weight in the car cuts off a pound of lading.

So it seems to me we should take the effect of the difference in weight into account when making comparisons tending to show relative economics of different methods or policies in car construction. Just what the results would be, I cannot say, as I have not figured it out. But I note from Mr. Rice's figures that $\frac{1}{16}$ -in. of metal in a 55-ton hopper causes an increase of weight of 2,250 lb., which we might call 2,000 lb. or one ton, as that is an easy figure to keep in mind.

I have heard and read of figures ranging all the way from two cents to 10 cents per lb. per year as the cost of carrying excess weight in cars. I do not know what the figure should be; I suppose it would vary considerably with different roads and conditions. This figure, however, is made up of two parts—the cost of hauling the excess weight, and the loss of revenue due to the presence of the excess weight.

The effect of excess weight may be shown on draw-bar pull. The resistance of a 55-ton car will vary from 4 to 15 lb. per ton, depending upon whether it is loaded or empty, and the grade resistance is 20 lb. per ton for each percent of grade; so that we might consider an average figure of 10 lb. per ton as the resistance of a car covering both loaded and empty movement, up hill and down. Now, if $\frac{1}{16}$ -in. extra thickness of plates causes an increase in weight of one ton, and there are 100 such cars in a train, the increased train resistance would be 1,000 lb., which is about two per cent of the average draw-bar pull of a heavy modern locomotive. If it is the policy of a road to put the extra weight into the cars, then about two per cent of the cost of operating and maintaining freight locomotives is chargeable against the extra weight in the cars. I do not know just how much this would amount to per car per year, but I believe it would be considerable.

As to the loss of revenue caused by excess weight, this would not make any difference in a car which could not be given its maximum weight loading, as a box car, loaded with merchandise, or most open-top cars loaded with coal. But when cars are loaded with ore or limestone, and are trimmed to see that the last pound is put on to bring the loading up to the load limit, then every pound of weight in the car counts against you. In our case, every car so loaded with ore would cause a loss of something over a dollar in revenue. If a car made 30 trips a year, it would cause a loss of \$30.00 in revenue per year.

It would require some investigation to say definitely what these figures should be, but we can easily see that the men who advance costs ranging from two cents to 10 cents per pound per year have something to talk about, and cannot be so very far off. Even at two cents per lb. per year, the 2,000 weight in the extra $\frac{1}{16}$ -in. thickness of plates would cost \$40.00 per year; and at

three cents, \$60.00 per year. These costs would have to be stacked up against savings in maintenance when trying to settle upon a policy of car construction.

There are also other considerations to be taken into account in such a study. The investment charge in the extra material would be two or three dollars per car per year. The painting practice would have to be studied. Some roads protect their cars better than others in this respect, and the painting costs enter in as related to maintenance. The use of copper-bearing steel permits the paint to adhere to the sheets longer and this also has its influence. The question of renewing sheets due to wear, damage, abrasion, sledging hopper sheets, warping by hot metal and ashes, and other causes, also enters in. The question of scrap value of parts removed is a factor. The strength of the car is also a factor, and whether cars are dumped through the bottom or in a car dumper.

Mr. Rice touched on the subject of welding. This practice has considerable promise in the line of reducing weight in cars, as well as in reducing corrosion which starts around rivets and wherever two sheets are lapped. However, at the present time, the cost of a welded car is probably greater than that of a riveted car.

Denial of S. P.-Cotton Belt Application Recommended

WASHINGTON, D. C.

AN adverse report on the application of the Southern Pacific for authority to acquire stock control of the St. Louis Southwestern is recommended by Examiner Thomas F. Sullivan of the Interstate Commerce Commission in a proposed report made public on May 19. Denial of the application is proposed on the ground that the plan would be contrary to certain fundamental principles of the commission's consolidation plan, and "throw out of balance" an important feature of the plan which is denial of access by the principal transcontinental lines to the St. Louis and Memphis gateways, and also on the ground that the price paid and to be paid by the Southern Pacific for Cotton Belt stock is clearly too high "in view of the substantial and consistent reduction in earnings and the substantially weaker condition of that carrier" since 1925 when the commission held that a still lower price proposed to be paid by the Missouri-Kansas-Texas for the stock seemed to be too high.

The commission's plan had assigned the Cotton Belt to System No. 10-Illinois Central. The Southern Pacific had purchased 87,200 shares of preferred stock at \$100 a share and 42,600 shares of common stock at an average of \$67.75 per share, and had entered into an agreement with Kuhn, Loeb & Co., proposing to acquire 24,700 shares of common stock and 59,380 shares of preferred, upon authorization by the commission, for \$7,887,488 and interest, which would give it a total of approximately 58 per cent of the outstanding stock.

"The record in this case is singularly weak from the standpoint of a showing of public interest," Examiner Sullivan says. The applicant points to the economies to be effected by the unification of terminals and the elimination of duplicate trackage but it admits that these economies may be effected by agreement with

the Cotton Belt and without acquisition of control. There is no promise of establishment of additional routes or reduction of rates; in fact, so far as the public is concerned, it will not be aware of any change, inasmuch as the Cotton Belt is to be operated separately and independently as at present. The strongest point presented is the fact that the Cotton Belt is a weak line and should be acquired by some larger and stronger system. But that this fact is sufficient justification for permitting the applicant to secure direct access to Memphis and St. Louis and the throwing out of balance an important feature of the commission's consolidation plan is at least open to question.

On the other hand, the plan may work to the distinct detriment of the public as feared by the trunk line interveners. The statement of the traffic officers of the Frisco, the Texas and Pacific and the Missouri Pacific that the originating carrier can hold to its rails for the long haul the bulk of local point traffic and a substantial part of competitive traffic is uncontradicted. At the present time the public has the advantage of all competitive routes connecting with the applicant's lines. Under the acquisition of control, as proposed herein, with the undoubtedly advantage accruing to the applicant as originating carrier, it may fairly be expected that operations would be so conducted as to make competitive routes less attractive, even though actually superior under open competitive conditions thereby depriving the public of those existing advantages.

If there was involved only the unification of the Texas & New Orleans and the Cotton Belt, a different situation would exist, but the matter must be considered in its entirety and from all angles. To admit the Southern Pacific to the Memphis and St. Louis gateways would place the strictly southwestern lines between the upper millstone represented by the Santa Fe and the nether millstone represented by the Southern Pacific-Cotton Belt route, and substantially, if not entirely, destroy their competitive value to the public.

"The commission's consolidation plan represents a carefully considered adjustment of railroad lines made with a view to observing the directions prescribed by Congress. While the report states in effect that the plan may not be regarded as the final word on the subject and may be modified as conditions warrant, etc., it is apparent nevertheless that certain fundamental principles have been regarded which may not be upset without throwing the plan into confusion if not actually destroying it. One of these principles is the denial of access by the principal transcontinental lines to the St. Louis and Memphis gateways. As argued by the Frisco, if the applicant is to be permitted to extend its lines to those gateways, then its principal competitor, the Santa Fe cannot fairly be denied access at least to St. Louis. With the applicant and the Santa Fe reaching the Mississippi river gateways, the present competitive situation would be strongly and adversely affected to the injury of the carriers now competing for traffic through those gateways, and with consequent injury to the public. Certainly such a situation would disregard the injunction of Congress that in evolving a consolidation plan 'competition shall be preserved as fully as possible and wherever practicable existing routes and channels of trade and commerce shall be maintained.'

The report says that the preferred stock is to be acquired from New York Investors, Inc., which got it for \$89 a share after the Kansas City Southern had been required to divest itself of the stock, and that, assuming a price of par for the preferred the proposed purchase price represents \$78.92 for the common.

Work Done Now Costs Less

Reports from chief engineers point to marked savings to be made on projects authorized at this time

CONSTRUCTION work can now be done at a saving of from 5 to 35 per cent as compared with equivalent work placed under contract 18 to 20 months ago. It is doubtful if there is a single important item of work that cannot be done cheaper today than at any time in the last 10 years. For nearly two years there has been a progressive though not necessarily uniform reduction in the cost of construction work. Contracts awarded early last year were placed at more favorable prices than those which prevailed during 1929, but bids received and the prices fixed in contracts awarded for work this year are much lower than those for work of the same character placed a year ago.

As a consequence, improvements undertaken at this time will involve appreciably smaller capital charges, and for that reason betterments designed to effect savings in operation will produce a considerably higher rate of return than indicated by studies made two years ago. Moreover, work of all kinds can be done most expeditiously, deliveries are prompt, labor is at the most efficient level in years, and work involving interference with operated lines will occasion less obstruction now than during times of heavy traffic.

Observations of Chief Engineers

Such are the conclusions drawn from a study of material prices and of information received from the chief engineers of 15 of the larger railways in the United States and Canada in answer to inquiries addressed to them to ascertain their observations on price trends in work in the territories local to their lines. To be more specific, the reduction in the cost of grading, according to the information received, ranges from 8 to 33 per cent; track laying and surfacing handled by contract, 10 to 35 per cent; concrete masonry, 10 to 15 per cent; structural steel, erected, 15 to 25 per cent; buildings, 5 to 30 per cent; heating, ventilating and plumbing, 10 to 20 per cent. In only one case, and this related to a comparison of bids received in 1931 with bids on the same work in 1927 (but not then awarded) were prices actually higher, and it is to be presumed that circumstances of a distinctly local character influenced this deviation from the general tendency.

It is to be expected, of course, that local conditions and the nature of the individual project will, of necessity, influence any comparison of costs and that it is, therefore, impossible to draw any exact parallels between present costs and those prevailing during the boom ending in 1929. Nevertheless, there are potent influences that make for appreciably lower costs in construction work at this time.

Prices of Most Materials Are Lower

That commodity prices are lower is a matter of common knowledge and, obviously, the cost of construction work involving the use of various materials, either finished or raw, will be influenced largely by the changes in material prices. Examples of reductions during the past 18 or 20 months are readily had. Structural steel shapes, plates and bars are from 15 to 18

per cent lower; nails cost 25 per cent less; mill prices on Southern pine lumber are approximately 10 per cent lower while those for Douglas fir average 30 per cent less, although no such marked reductions have been made in bridge timbers or other material in structural grades. Common brick has declined about 10 per cent.

In the case of materials for concrete construction, the situation is a peculiar one. Published quotations for aggregates indicate an actual advance in prices during the last two years, but information received from a number of purchasers shows reductions of from 5 to 15 per cent. However, it is in cement that we find a marked break in prices. Until the first of this year, published price levels were maintained with little change, but by the first of May, published quotations had dropped from about 5 to around 80 cents per barrel. These figures, however, do not present the real situation in the cement industry which is now in the throes of a price war that has resulted in sales as low as \$1 per barrel at the mill for bulk cement. Although such extremely low prices apply only where large quantities are involved, as for highway construction, any user of cement in appreciable quantities is now able to satisfy his requirements at a saving of at least 25 per cent, compared with costs during 1929.

Reductions Are Not Uniform

The magnitude of the reductions in prices varies with the locality and with the nature of the commodity. Track materials, for example, are not much lower in price now than they were two years ago, with the exception of ties, the market for which is greatly depressed, as outlined in the report of the convention of the National Association of Railroad Tie Producers in last week's issue. The prices of rails and rail joints continue to follow the standard base set in 1922. Tie plates are cheaper, but quotations on spikes and bolts today do not differ greatly from the corresponding figures in the second half of 1929.

In considering these statements, it is necessary to keep in mind that conditions are "spotty," as one chief engineer described them. The situation as outlined by another engineering officer is that: "There are some localities where construction material prices have been low on account of excessive competition but the material men have been getting together to correct a bad situation, with the result that there are several localities where material prices have not followed the general trend." It goes without saying that price levels that are the result of cut-throat competition cannot continue long without disaster to the industry involved. In most cases, however, as cited in the statements quoted above, sane thinking leads to corrective measures. As a consequence only the forehanded buyer will be able to enjoy the full benefit of current price depressions.

Some Reductions in Wages

Whether lower material prices will seriously influence the total cost of any project depends of course on the extent to which materials enter into the work as a whole. But even in building construction, in which

labor is employed primarily in the application of materials, wages have a pronounced influence on the total cost. As a matter of fact, labor is the formidable feature of practically all construction and its relative cost must be considered. An attempt to generalize with respect to labor costs is even more difficult than in the case of material prices. Conditions differ with the territory and with the class of work. Cases have been cited of men employed on highway work for as little as at \$1.50 per day, whereas unionized highway workers are employed in contiguous territory at no reduction from the scale in effect two years ago. It is apparent, however, that grading contractors and those that employ common labor on other work outside of the large cities are securing labor for less money. One report cites 30 to 35 cents per hour as the going rate in territory where 40 cents was the average wage a year ago.

Reference is frequently made to the solidarity of the building trades and their insistence on established wage rates, but in numerous localities wages have been cut 10 to 20 per cent and contract prices for building work in closed-shop cities evidence "unofficial" departures from wage rates prescribed by existing agreements. It is apparent, therefore, that in spite of a wide variation in local conditions, the trend is toward lower wages, and that reductions in wages are a factor in the reduction in the cost of construction.

Aside from wage rates, however, it is common knowledge that the efficiency of labor always varies inversely with the demand for it; men work more diligently when work is scarce. The more skillful men are retained to the last as the contractor's organization is reduced, and even in cities where labor is highly organized, builders manage to pick the workmen who rank high in skill and efficiency during periods of slack demand. Several responses to our inquiries place considerable stress on the influence of increased efficiency of labor in reducing construction costs, although one reply discounts this factor as well as wage decreases in their bearing on contract prices.

Contractors' Profits Smaller

Another factor contributing to the reduction in construction costs is the fact that according to the consensus of comments received, bids tendered on work now being advertised contemplate much smaller margins of profit than is usually the case. Severe competition for the limited amount of work offered and a desire to secure work, if for no other purpose than to keep the nucleus of an organization together, are factors of great importance. This condition is all the more noteworthy because the bids received by the railways are, with some exceptions those of experienced, reliable contractors of sound financial standing.

The railways have long exercised a high degree of discrimination in preparing lists of prospective bidders, although there have been times in the recent past when they have been compelled for reasons of policy to permit additional contractors or those of unknown standing to bid on work in communities where they have business or political influence. However, this is not now a matter of much moment, if the comments quoted below are typical.

"Conditions are not serious on account of inexperienced bidders."

"Our general practice is not to ask for bids from any but experienced or competent bidders."

"We endeavor to select our bidders and do not allow those whom we consider incompetent to handle the work to receive proposals."

"We have not been seriously affected by bidding

from incompetent bidders, but more than the usual care in selecting bidders is necessary to prevent embarrassment on that account."

The last comment raises a point that is decidedly pertinent. When work is being let under conditions that permit of but a small margin of profit and where costs are below normal levels, a sudden change in conditions may place a contractor of limited financial resources in serious straits. Moreover, the chief engineer of an eastern railway expresses the belief that some work has been taken below cost, while another quotes certain contractors who are of the opinion that excessively low bids at this time on work that must be carried over into another year may easily lead a contractor into a predicament with rising wages and material costs.

Will Result in Real Savings

However, aside from the question of being assured that the contractor is in a position to carry out the work at what are believed to be bottom prices, the attitude of engineering officers toward the advantages to accrue from the active prosecution of work at this time are entirely favorable, as indicated by the following comments:

"I do not know of any particular disadvantage from the standpoint of the owner that might obtain from these reduced costs, it being my opinion that the manufacturing and contracting industry is the best judge of its own interests and best qualified to determine its own policy in relation to its prices and bids."

"If work is let only to experienced and reliable contractors, familiar with territories and conditions, the reduced prices at which work can now be let will represent real savings in cost."

"I believe that work done at this time, not only in structural steel, but also in building and railroad construction, will effect real savings."

No better statement of the advantage of going ahead with work at this time can be made than that offered by President W. W. Atterbury, of the Pennsylvania in February, when he announced that that railway would speed up its \$175,000,000 program for improvements undertaken in 1930 so that it would be completed in 2½ years instead of four.

"It had been planned that the remainder of the work would be spread over a period of four years. However, the Pennsylvania has come to the conclusion that now is the time to go forward with redoubled energy, and it has decided to complete this work, if possible, within approximately two and one-half years."

"It is our view that commodity prices are now at a level, and the efficiency of labor is so great, that these improvements can be definitely contracted for on exceptionally favorable bases. Furthermore, at a time like the present, with reduced traffic, the work can be done with much less interference from the movement of passing trains which, of itself, would constitute a definite economy."

DURING MARCH, 1931, the Missouri-Kansas-Texas, for the first time in its history, operated an entire month without an engine failure. The total mileage of all locomotives in service in that month was 930,610.

THE ST. LOUIS-SAN FRANCISCO reports that in January, when 4,233,170 passenger train miles were operated, 97.8 per cent of its passenger trains were on time, while in February, 97.6 per cent were on time. During these months, there was not a single hot box reported on passenger-train cars or locomotives. There were only 81 hot boxes charged to freight equipment in January, and only 61 in February.

What "Savings in Transportation" Are Made on Inland Waterways?

Some widely quoted figures, a letter from the *Railway Age* to Major-General Lytle Brown, chief of army engineers, regarding these figures, and General Brown's significant reply

In an article entitled "Water Transportation in the United States" appearing in the January, 1931, issue of the *Harvard Business Review*, Major General Lytle Brown, chief of engineers, U. S. Army, made the following statement:

"Since the establishment of our government, there has been expended (up to June 30, 1929) upon the entire system, including harbors, canals, and inland rivers, a total in round numbers of \$1,500,000,000. The interest on this sum at 4 per cent amounts to \$60,000,000. Allowing for amortization, and including the cost of maintenance, the annual carrying charges would total about \$88,000,000. As against this annual charge, it has been conservatively estimated, from careful studies of traffic movements and rail and water rates on important commodities, that the saving in transportation costs, due to the improved channels in our harbors, canals and inland waterways, amounts to something like \$600,000,000 annually."

Similar statements have been made repeatedly by former Secretary of War Good, by Secretary of War Hurley, by Major General Ashburn, and by many other official and unofficial advocates of further inland waterway development.

In an endeavor to obtain a statement of the economic principles on which the government's policy of inland waterway development is based, the *Railway Age* on December 19, 1929, addressed a formal inquiry to Secretary of War Hurley. On January 8, 1930, the Secretary replied that "The War department has no intention of inviting controversial discussion as to the relative merits of various forms of transportation." The correspondence with Secretary Hurley was published in the *Railway Age* of January 18, 1929, pp. 183 and 184.

With the reiteration by General Brown, quoted above, of the statement of a total investment in "harbors, canals, and inland rivers" amounting to \$1,500,000,000, and an estimated consequent annual saving of \$600,000,000 in transportation costs, further correspondence has ensued which throws an entirely new light upon this oft-repeated claim.

A Letter to General Brown

On February 21, 1931, the *Railway Age* sent a letter to General Brown. After quoting statements made by him in his article in the *Harvard Business Review*, this letter said:

"The present controversy relates entirely to the economic justification of expenditures to improve rivers and construct canals. As to canals, it does not relate to short canals connecting large natural deep waterways such as the Great Lakes.

"Will you kindly send me the following figures:

"(1) The total expenditures that have been made

to improve rivers and build canals, exclusive of the short canals above mentioned.

"(2) The annual total maintenance costs of these particular classes of waterways.

"(3) The estimated annual savings in transportation costs resulting from the improvements in rivers and the construction of canals, exclusive of the short canals such as heretofore mentioned."

Under date of April 3, General Brown replied as follows:

"1. In accordance with the request contained in your letter of February 21, I furnish herewith a statement, itemized by waterways, of the total expenditures that have been made by the Federal Government to June 30, 1930, to improve rivers and build canals, exclusive of the canals connecting large natural deep waterways such as the Great Lakes. The expenditures therein shown are as nearly as may be determined the capital expenditure for new work, and do not include the accumulated maintenance charges during the long periods over which work has been prosecuted. You will note that the aggregate of these sums is \$422,625,093.19. In order that a more complete understanding of this expenditure may be had, the date of the adoption of each project and the date of completion are shown opposite each.

"2. The annual maintenance costs of the same class of waterways during the fiscal year ending June 30, 1930, are shown on the tabulation. The aggregate maintenance during the year was \$13,857,339.14.

No Estimate of Total Savings on Rivers and Canals

"3. This Department has not prepared an estimate of the annual savings in transportation costs resulting from the improvement in rivers and the construction of canals. The estimate of the saving in transportation costs due to the improved channels in our harbors, canals and inland waterways, appearing in my article on water transportation in the *Harvard Business Review* of January, 1931, to which you refer, was based on a study which had been made by this Department, of the most important of the water transportation systems, including the Great Lakes and the seacoast harbors. It did not, in point of fact, include the estimated savings of the inland waterway transportation system, this for the reason that such system is in a development status. The large sums which are being spent at the present time on inland waterways find their chief justification in the increased commerce that is expected to result from such development.

"4. Studies have been made of the savings already secured from inland waterway improvement. I enclose for your information a copy of an Interim Report, prepared by the Board of Engineers for Rivers and Harbors of the War Department, in cooperation

with the United States Shipping Board, on Transportation on the Ohio River System. The savings computed as a consequence of the improvement of the Ohio River, paragraph 71, page 19 of that report, are somewhat in excess of \$5,000,000 for the year 1925. For the Monongahela, as given on page 81 of the report, the savings for the year 1924 amounted to somewhat in excess of \$13,000,000. The considerable increase in the commerce on the Ohio resulting from the completion of the slack water improvement, indicates that the present economic saving to the nation through the improvement of that river is considerably in excess of the figure quoted. The ton mileage on the Ohio River for the fiscal year 1929 was in fact nearly double that of 1925."

The statistical statements mentioned by General Brown in his letter showed a total of 239 active and 104 inactive inland waterway projects as of June 30, 1930. "First cost" up to that date was stated as \$415,835,083.70 for the active projects, and \$6,790,009.49 for the inactive projects. Furthermore, upon the active projects there were charges, for the fiscal year 1930, of \$8,280,656.52 for maintenance (of which \$1,860,742.61 represented Mississippi flood control expenditures), and of \$5,576,682.62 for operation and care.

Case of the Monongahela

Out of this entire total of 343 active and inactive federal inland waterway projects upon which an investment of \$422,625,093.19 had been made up to June 30, 1930, General Brown in his letter mentions the savings claimed on but two rivers, the Ohio and the Monongahela. The Ohio is represented in his statement by three separate projects and the Monongahela by one, so but four out of the total of 343 projects are thus covered.

With reference to savings in transportation costs upon the Ohio river, the Interim Report mentioned in General Brown's letter stated:

"The savings in the cost of transportation accruing to the Ohio River over what it would have cost by rail amount to \$5,328,894 for the year 1925. A comparison of the savings *** with the annual fixed charges accruing to the Ohio shows a comparatively small deficit."

General Brown's presumable saving on the Ohio for 1925 is thus, in reality, a "small deficit." As regards his statement of an indicated larger saving in later years because of an increase in traffic on this river, the Bureau of Railway Economics, in a recent study, places the comparative costs of transporting a ton of freight between two points 100 miles apart by rail at \$1.24 on the Ohio River and at 88 cents, or 29 per cent less, on the railroads paralleling the river.

It is generally conceded that savings do result from transportation operations on the Monongahela. This is true because of the relatively small investment in that stream, placed at \$13,311,893.24 in the table accompanying General Brown's letter, and because, as stated in the Interim Report previously mentioned, it has an "exceptionally convenient system of traffic," including principally "river-bank mines from which coal can be delivered without rail haul." Of the \$13,000,000 annual savings mentioned by General Brown as accruing from transportation on the Monongahela river in 1924, a total of more than \$11,000,000 was assigned in the Interim Report to coal traffic.

Thus, out of a total of 343 federal inland waterway projects (representing, of course, a smaller number of waterways) with a total investment of \$422,625,093.19, General Brown's letter shows savings, which can probably be supported, upon one river, representing an investment of \$13,311,893.24.

I. C. C. Counsel Find 15a Unimportant

WASHINGTON, D. C.

WHILE Section 15a of the interstate commerce act "contemplates" a fair return for the carriers, and even "permits" such a return, in the event that it should happen to result from the aggregate of rates fixed by the Interstate Commerce Commission as reasonable and non-discriminatory under other sections of the act, the provisions of the section "do not constitute a guaranty that the carriers shall absolutely and in all events earn the fair return," according to the brief which counsel for the commission have filed in the federal district court at Chicago in opposition to the petition of the western railroads for an order setting aside the commission's reduction of western grain rates. One of the principal arguments of the roads is that Section 15a imposes a positive duty on the commission to consider its provisions in determining what are reasonable rates and that since the commission has reported that they have never earned the fair return a lowering of existing rates on such a large part of their traffic as grain is not compatible with the provisions of Section 15a.

According to the commission counsel the qualifying expression "as nearly as may be" in the law "obviously contemplates that the return may be less than the fair return fixed by the commission" and they seem to argue that in view of these words and the proviso that "the commission shall have reasonable latitude to modify or adjust any particular rate which it may find to be unjust or unreasonable," Section 15a has practically no bearing on the fixing of an individual rate "or rates."

"If the rates prescribed by the commission here under attack will not, with other existing rates, yield the carriers the 15a (2) return," the brief says, "then it is the duty of the carriers to present to the commission proposals for rates on other commodities, which will approximate the 15a(2) design. The commission is not under the duty of taking over the management of the traffic departments of the carriers. They should initiate rates, not the commission."

"While Section 15a(2) contemplates a return equal to the return fixed as fair by the commission, and the commission must give consideration thereto in fixing rates, it certainly was never intended that rates found to be unreasonable or discriminatory or prejudicial or preferential were to be perpetuated until the carriers' fair return was realized."

The railroads had contended that Sections 1, 15, and 15a are linked together and that the standard of Section 15a must necessarily be read into the standard created by Section 1 and supplement it."

Reference is made in the brief to a statement by the Supreme Court that the statute does not require "that the net return from all the rates shall affect the reasonableness of a particular rate or a *class of rates*," and extracts are cited from previous decisions of the commission construing Section 15a "to permit, but not to guarantee" the carriers to earn 5.75 per cent, and holding that Section 15a does not "repeal or supersede" other provisions of the act, that it "does not constitute a guaranty to the carriers nor is the obligation cumulative," and that a general reduction of the rate level such as was made in 1922 may give "fuller assurance to the carriers of realizing the fair return contemplated by the

law." No assertion is made that the reduced grain rates will increase traffic, but on the other hand it is asserted that the railroads have not claimed that the proposed rates are unreasonable.

It is asserted that the provisions of the commission's order relating to the elimination of free transits will offset to some extent the reductions in rates and that "the revenue effects of the revision is more or less speculative and cannot be determined with any real approach to accuracy in advance of a reasonable trial." The revision is "looked upon as a necessity, and a distinct forward step in the adjustment of rates on grain and grain products in a manner best to promote the expeditious handling of the wheat crop and the interests of consumer, market and producers."

"It is significant," the brief says, "if carriers seriously contend that Section 15a imposes an absolute duty on the commission to see that they are given a 5.75 per cent return, that they have never sought to mandamus the commission to perform this duty, when the face of the report shows they have not made this return."

Burlington Holds Down Its Operating Expenses

THE Chicago, Burlington & Quincy in 1930 had freight revenues of \$111,157,127 and passenger revenues of \$15,360,185. Total operating revenues were \$141,379,421—a decrease of 12.95 per cent. Revenue ton-miles decreased 11.79 per cent and revenue tons carried 10.93 per cent, the decline in all commodity classifications except that of agricultural products being greater than the average for all commodities. The greatest decrease was in forest products, the tonnage under that heading being 31.06 per cent lower than in 1929. The tonnage of agricultural products declined but fractionally—less than one per cent.

Operating expenses totaled \$98,877,813, a reduction of 11.37 from the preceding year. Of the more important component categories of this figure, maintenance of way expenses were decreased by 16.81 per cent, transportation expenses by 9.91 per cent and maintenance of equipment by 13.52. The operating ratio was 69.94 as compared with 68.69 in 1929.

Net railway operating income totaled \$27,956,064, as compared with \$35,357,962 in the preceding year. Gross income before fixed charges totaled \$31,481,163, a decline of 19.4 per cent from the preceding year. Income available for fixed charges was more than three times such charges. Net income totaled \$21,979,859—25.7 per cent less than in 1929. Of this net income \$17,083,870 was devoted to the payment of the regular 10 per cent dividends on the stock and \$4,895,989 was transferred to profit and loss. From the latter, however, an extra dividend of 5 per cent, totaling \$8,541,935, was paid from surplus, so that dividends for the year were actually in excess of earnings—not a serious matter for a road such as the Burlington with a corporate surplus 1.3 times as great as its outstanding capital stock.

In Table I details of traffic and earnings are given for the years since federal control. It will be noted that the volume of traffic in 1930 was lower than in any year since 1922 and that operating revenues were lower than those of any of the other ten years shown. On the other hand, operating expenses were likewise sharply reduced, the operating ratio being the lowest attained in any year of the entire period with the exception of 1929. Net income, consequently, made a comparatively favorable showing. It was, of course, lower than in 1929 or 1928, but it exceeded that of 1927 and that of each of the years 1922-25 inclusive.

Freight service operating performance of the Burlington and its principal subsidiaries under conditions of declining traffic is given in Table II. All three lines showed improved train speed and greater fuel

(Continued on page 1039)

Table I—Chicago, Burlington & Quincy, Operating Results, Selected Items, 1920 to 1930

Year	Mileage	Revenue ton miles (thousands)	Revenue passenger miles (thousands)	Rev. per ton cents	Total operating revenues	Total operating expenses	Net operating revenues	Operating ratio	Net railway operating income	Net after charges	Net charges for additions and betterments
1920	9,390	14,130,364	1,314,984	0.932	185,270,768	164,017,388	21,253,380	88.52	8,100,104	22,924,364	14,738,485
1921	9,364	10,554,788	999,701	1.163	168,712,268	128,216,290	40,495,978	76.00	28,696,588	25,609,973	8,304,559
1922	9,364	11,754,596	941,748	1.033	164,916,471	126,777,703	38,138,767	76.87	25,152,174	20,261,488	19,359,165
1923	9,401	12,690,384	967,097	0.996	171,270,661	134,290,379	36,980,282	78.41	25,365,567	19,290,529	17,406,999
1924	9,407	12,287,748	909,302	0.975	162,674,878	119,958,734	42,716,144	73.74	28,742,112	21,899,829	9,537,772
1925	9,404	12,298,288	893,670	0.965	159,155,178	116,671,868	42,483,310	73.31	28,131,918	21,184,593	11,432,319
1926	9,392	12,651,222	871,773	0.960	161,317,442	116,462,808	44,854,634	72.19	29,955,831	23,987,968	6,889,525
1927	9,390	11,942,859	811,608	0.992	156,320,453	111,917,503	44,402,950	71.60	28,143,308	21,443,123	10,971,881
1928	9,375	12,931,723	730,970	0.982	162,891,409	114,191,159	48,700,250	70.10	32,912,367	26,278,252	4,420,551
1929	9,373	12,873,521	719,017	0.985	162,409,925	111,565,542	50,844,382	68.69	35,357,963	29,576,538	9,778,274
1930	9,333	11,356,358	606,612	0.979	141,379,421	98,877,813	42,501,608	69.94	27,956,064	21,979,859	7,169,718

Table II—Comparison of Selected Freight Operating Statistics—Twelve Months

	C. B. & Q.				C. & S.				F. W. & D. C.			
	1930		1929		Per cent of change		1930		1929		Per cent of change	
	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.
Mileage operated.....	9,281	9,316	11.6	1,037	1,034	0.3	695	694	2,226	2,226	17.6	
Gross ton-miles (thousands)	29,478,259	33,342,060	12.8	1,809,502	2,162,298	16.3	1,835	1,835	625,899	787,555	20.5	
Net ton-miles (thousands)	13,143,182	15,071,578	10.9	1,232	1,442	14.6	1,044	1,220	1,044	1,220	14.4	
Freight train-miles (thousands)	15,833	17,783	11.3	1,380	1,621	14.9	1,063	1,264	1,063	1,264	15.9	
Freight locomotive-miles (thousands)	17,252	19,457	10.6	45,846	53,463	14.3	43,044	51,478	14.3	43,044	51,478	16.4
Freight car-miles (thousands)	801,252	896,142	14.8	100,421	120,846	16.9	73,066	90,065	73,066	90,065	18.9	
Freight train-hours	1,127,720	1,323,975	7.4	20.7	22.3	7.1	30.0	34.2	30.0	34.2	12.2	
Car-miles per day.....	35.0	37.8	7.4	28.0	30.1	6.9	23.5	24.0	23.5	24.0	2.1	
Net tons per loaded car.....	26.9	26.9	...	61.5	61.3	0.3	61.9	63.7	61.9	63.7	2.8	
Per cent loaded to total car-miles.....	60.9	62.5	2.6	357	412	13.3	437	524	437	524	16.6	
Net ton-miles per car-day.....	575	636	9.6	38.2	38.0	0.5	42.2	43.2	42.2	43.2	2.3	
Freight cars per train.....	51.5	51.3	0.4	640	684	6.4	599	645	599	645	7.1	
Gross tons per train.....	1,862	1,875	0.7	1,468	1,500	2.1	1,528	1,588	1,528	1,588	3.8	
Net tons per train.....	830	848	2.1	640	684	6.4	645	684	645	684	7.1	
Train speed, miles per train hr.....	14.0	13.4	4.5	12.3	11.9	3.4	14.3	13.5	14.3	13.5	5.9	
Gross ton-miles per train-hour.....	26,140	25,183	3.8	18,019	17,893	0.7	21,836	21,519	21,836	21,519	1.5	
Net ton-miles per train-hour.....	11,655	11,384	2.4	7,851	8,161	3.8	8,566	8,744	8,566	8,744	2.0	
Lb. coal per 1,000 gross ton-miles.....	120	126	4.7	160	167	4.1	134	137	134	137	2.2	
Loco. miles per loco. day.....	60.2	62.9	4.3	108.0	108.0	...	45.1	53.4	45.1	53.4	15.5	
Per cent freight locos. unserviceable.....	18.9	18.5	2.2	24.7	26.3	6.1	18.3	19.6	18.3	19.6	6.6	
Per cent freight cars unserviceable.....	5.3	5.2	2.0	7.0	6.8	3.0	7.1	6.4	7.1	6.4	11.0	

RAILROADS MUST CO-OPERATE

Commissioner Eastman finds present efficiency individualistic—
Wide field for betterment through collective
action as yet untouched

GREATER co-operation among the railroads in efforts to work out ways of meeting the new conditions in transportation was urged by Commissioner Joseph B. Eastman, of the Interstate Commerce Commission, in an address before the New York Traffic Club on May 20. Asked to discuss the "Declaration of Policy" adopted by the Association of Railway Executives he said he preferred to discuss some of the things which it omitted, perhaps because it was purposely confined to matters where it was thought that the government might immediately be of aid, because he could not help feeling that the declaration was inadequate to the needs of the times and that the greater importance lies in matters which it did not mention.

The declaration is essentially, he said, a plea that to the great volume of existing laws there be added legislation along several different lines, the object being protection of the railroad industry in certain respects. It is quite within the bounds of probability, he added, that federal regulation should be extended more comprehensively than at present over the entire field of public transportation. An abstract of the address follows:

That the railroads and their friends are alarmed by these new transportation rivals is evident. My own idea is that in these times of financial depression they are mentally depressed as well, and unduly pessimistic, just as there was undue optimism throughout the country not so very long ago.

If ever the time comes when the railroads will go the way of the stage coach and the mule-propelled canal boat, that time is still in the remote future. The railroads are now and for many years will continue to be the backbone of transportation in this country. Some mileage is undoubtedly doomed to abandonment, but by and large the country needs the railroads and they must and will be supported.

Present Situation Disturbing to Business

But although this is the fact, the present situation nevertheless does threaten serious dangers in the way of unnecessary economic waste, capital losses, confusion, and the evils of intense competition which bring in their wake unjustifiable discriminations between shippers, unsettled business conditions, and even political corruption.

It is very probable that the scope of public regulation should be extended; but while such regulation is a cure, or at least a palliative, for some things, it is no remedy for others. The two things most vitally needed in the transportation industry at the present time are brains and a spirit of co-operation. I do not mean, of course, that brains are absent in this industry. It has plenty of them. What I refer to is their most effective use.

Anybody who is at all familiar with existing conditions knows that there are many wasteful practices for which competition among the railroads themselves is solely responsible. Let us take, for an illustration, the matter of freight routing. Between most important centers of traffic there are an astounding number of open routes. Some are direct, but many are circuitous, and some are extremely roundabout. Practically every railroad has an army of solicitors in the field, both on and off its lines, and where it has no direct route available it seeks to induce the movement of traffic over some circuitous route, and these solicitors have a surprising amount of success. The theory is that added traffic over a route not nearly used to capacity involves little added expense and is so much gain. If the practice could be confined to one railroad or a few railroads, this theory might be sound, but when all indulge in it the advantage becomes very problematical. It is at least quite possible that all suffer

on their direct routes because of the traffic which is diverted to circuitous routes, that there is no net gain to anybody, and that on the contrary all the railroads and the country as well suffer from the economic waste entailed.

The characteristic thing about these competitive wastes is the way in which they develop. One railroad seeks to gain some advantage over others and thus starts a practice which spreads until all are doing it. When that stage is reached the practice ceases to be an advantage to anybody and becomes a common burden, but no railroad dares to take the initiative in breaking it up. The old adage might well be paraphrased to read, "Competition does make cowards of us all." The railroads used to be conceived of as despotic tyrants. They may be in certain respects, but not when big shippers are involved. There the roles are more apt to be reversed.

Efficiency Increase Individual, Not Co-operative

In recent years the railroads have done remarkable work in increasing the economy and efficiency of their operations, but the wastes which they have attacked are those which they could individually eliminate. They have made much slower progress in attacking the wastes in service and revenues for which they are jointly responsible and which can be eliminated only through co-operation.

The introduction of any new and effective means of commercial transportation may create a necessity for restudy of railroad service and rates as they then exist. To the extent that the new means is more economical or otherwise serves the public need better than the old, obviously it ought not to be suppressed, and as a matter of fact it is impossible permanently to suppress it. Two questions therefore arise. The first is whether the new service is actually more economical or more convenient than service which it is possible for the railroads to furnish. And if this question be answered in the affirmative, the second is whether the railroads can themselves utilize this new means of transportation as an auxiliary or co-operate with it to advantage. From the public point of view the ideal end to be attained is provision of the best composite system of transportation with a minimum of unnecessary duplication and competitive waste.

Rate Structure May Need Radical Revision

The first question which I suggested is also complicated by the fact that the rate structure as well as the service must be taken into consideration. As we all know, information as to particular costs of railroad service has been fragmentary and deficient. By and large, railroad rates have not been based on such particularized costs, but on the other hand the element of what the traffic will bear has had much influence. It is quite possible, if not probable, that existing rates in many instances make it possible for a new form of service to compete successfully notwithstanding that it is actually less economical than service which the railroads are able to furnish. It may be, therefore, that a thorough study of existing conditions will lead to the conclusion that the rate structure must be revised in very important respects.

This is a thought which I must admit is not altogether welcome to me. For some time the commission has been striving to introduce order and coherence and stability into the rate structure, and it has made substantial progress in that direction. It is discouraging to feel that perhaps this work must be partly undone and a shift made to new lines of progress. But nothing is gained by refusing to face facts or to follow where they may lead, and I believe that the composite mind of the commission is flexible enough to adjust itself to the impact of new conditions.

Possibilities of Container and Truck Body Transport

Coming back to the matter of service, the question is whether any new form of transportation is more economical and convenient, not only than existing railroad service, but—

and this is much more important—than the best service which the railroads are able to provide. Let me illustrate by truck service. One outstanding advantage which it has is flexibility and economy in terminal operation. I refer to store-door receipt and delivery and the absence of the classification and switching operations which add so much to the cost of railroad service. It is quite possible that for short hauls the trucks can provide more economical and convenient transportation than the railroads are able to furnish. But in the case of the longer hauls, when consideration is given to the comparatively small loads which the trucks can carry, to the grades which they must surmount, to the wear and tear on rubber tires, and to the man power which they must employ per unit of freight handled, it is difficult to understand how they can operate anywhere near as cheaply as the railroads. And at this point there enters into the picture possible new forms of railroad service, some of which are already being tested. I refer to such things as the use of containers, the transportation by rail of detachable truck bodies, and the utilization of such auxiliary services as the forwarding companies provide.

It may be that a comprehensive and adequate study of the entire situation would lead to the conclusion that within a certain distance range traffic should be given over to the trucks, either as independent agencies or as auxiliaries to railroad service, that present railroad terminal operations should be reorganized in important respects, and that for the longer hauls a composite service should be offered for many commodities which will utilize the rails between terminals and the trucks for store-door receipt and delivery at either end in connection, no doubt, with detachable truck bodies or containers. It might also be shown that trucks and buses could be substituted with advantage for much short branch-line service, a step which I believe has already been taken in some instances.

Opportunities in Electrification

In connection with passenger service, particularly in sections of comparatively dense population, it is possible that electrification under modern methods, having in mind the air rights over railroad land which it would release for other use, will result in net economy and at the same time make possible a more flexible and cleaner service which will bring back traffic to the rail lines. It has always been a matter of astonishment to me that railroad men have apparently given so little attention to the continual discomforts and annoyances which the smoke nuisance imposes upon passengers.

In the case of natural gas or fuel oil, it is possible that the railroads have not sufficiently informed themselves as to the actual costs of pipe line transportation and the relative advantages of good coal hauled at feasible railroad rates from the nearest available source and used in pulverized form at point of consumption. The coal operators and the railroads could work to mutual advantage on this problem.

In the case of water carriers, it is not impossible that thorough study might make it clear, even to the railroads, that such carriers perform certain useful functions which the railroads cannot perform as well, and that by friendly co-operation they could be encouraged in the performance of those functions with benefit, direct or indirect, to all concerned. Such co-operation might also have the effect of discouraging purely wasteful competition. I concede that in studying this subject attention must properly be given to the cost to the community of opening and maintaining the waterways, and that it may well be, also, that the railroads should be given wider opportunity to use water carriers as directly-owned auxiliaries.

I offer these suggestions merely as illustrations of the many questions and opportunities for research and enterprise which the new conditions present. The natural impulse when serious competition threatens is to seek the protection, so far as possible, of restrictive legislation by the states and by the federal government and at the same time to fight fire with fire in open competitive combat. No doubt legislation of some sort is needed, but it will be far from a panacea. Nor do I foresee any beneficial results from an old-fashioned rate war, or anything but costly waste from the establishment by the railroads of fighting bus and truck lines under their own control and designed to crush the competition of the independents.

Brains, research, and enterprise are needed which will strike much deeper into the heart of the problem than these crude expedients. The answer, it seems to me, lies in co-operation by the railroads, primarily with each other and secondarily with the other carriers. Only by such co-operation is there any possibility of doing away with the wastes

for which strictly railroad competition is responsible, and only by such co-operation can the work of remodeling and readjusting service and the rate structure and of combining the various forms of transportation into the best feasible composite whole be carried on with any degree of effectiveness. I know that certain individual railroads are doing excellent pioneering along these latter lines, and this is all to the good, but unless these efforts are co-ordinated to some considerable extent, waste and unnecessary confusion are bound to ensue. While the railroad lines are owned and operated by many separate companies, it is impossible to get away from the fact that they constitute a national transportation system. Just as it was found impracticable in this country for the states to work together harmoniously and effectively without a strong federal government, so the railroads will work at cross purposes with a lot of waste motion unless they provide means for better co-operation with each other.

A Problem in Organization

As I see it, it is really a problem in organization. There are many matters which concern the railroad individually, and these are taken care of reasonably well. There are other matters in which they have a common interest and which concern them collectively. Excellent work along these latter lines is being done by the American Railway Association and the Association of Railway Executives, but I question whether it goes far enough in certain important respects, including such matters as I am discussing here today. I say this with all due deference and realizing that I am an outsider looking in. To make the thought as clear as possible, it has occurred to me that the Association of Railway Executives is a relatively ineffective organization in many respects because it is made up of a large number of strong-minded and strong-willed individuals, each accustomed to dominate and each primarily interested in the welfare of his own particular property. It is difficult for such an organization to work as a unit for a common end, unless it takes such steps to secure and assemble the basic facts for consideration that differences of individual opinion as to what the facts are will be subordinated and minimized. This means the creation of an effective organization for study and research into the facts and the co-ordination of the results of individual pioneering. I have in mind, particularly, the facts as to the unnecessary wastes resulting from strictly railroad competition, both in service and in rates; as to costs of particular forms of service, both by railroad and by other forms of transportation; as to possible improvements in terminal and line-haul service, including the effective utilization and co-ordination of the various means of transportation; as to the standardization of container or detachable truck-body practice; as to necessary revision of rate structures without the creation of chaotic and discriminatory conditions; as to the most effective and economical use of forwarding companies; as to electrification; and the like.

Consolidation a Slow Process

Some seem to have the impression that sufficient co-operation will result as a sequel to consolidations and the consequent reduction of the number of active operating companies. I believe that they are mistaken in this. Unification is necessarily a slow process. There is nothing new about it. It has been progressing steadily for many years and it will continue to progress. Efforts to accelerate it unduly will almost inevitably be accompanied by financial excesses and waste. One of the outstanding dangers attendant upon the private ownership and operation of railroads and other public utilities, as experience has amply shown, is that they will be made the victims of financial exploitation in various forms. That is how the great railroad fortunes of the past were largely created. Even since the tremendous extension of the field of federal supervision by the Transportation Act of 1920 we have not wholly escaped from this sort of thing. I venture the guess that in the future some of the financial operations which have occurred since that date in connection with the acquisition and holding of stock interests in various railroad companies will not be a source of pride to any one. At the present time no major plans for the consolidation of railroad properties are pending, so far as I know, except in the eastern territory. Moreover, the preservation of competition in connection with unifications is enjoined, to a considerable extent, by the present statutory provisions. The need for co-operation will not cease with the process of consolidation, and in any event the need now exists and can be met without waiting for consolidations.

It has been suggested that certain federal statutes may

stand in the way of such railroad co-operation as I have suggested. I doubt whether this is so, but if it is, this situation can and should be corrected. In fact if such co-operation cannot be brought about by voluntary act of the railroads themselves, the alternative is action by the federal government. The study and research into the facts which I have suggested to be necessary could be carried on by a federal agency. It might be done by the commission, or a new department of the government could be organized for the purpose. The latter is the English plan, for they have a Minister of Transport, with largely administrative powers, in addition to a Railway Rates Tribunal and a Railway and Canal Commission, which have largely judicial functions. In the recent report of the Royal Commission on Transport it is stated that the Ministry of Transport "should keep under constant observation the general trend of development in transport so that progress may be guided and assisted on lines calculated to produce the greatest benefit to the community as a whole." In order that the minister may have at his disposal the best advice available on these matters, the appointment of a permanent Advisory Council on Transport is recommended.

Whether or not such administrative, research work as I have suggested, if it becomes necessary for the government to undertake the job, should be performed by the commission or by some new department akin to the British Ministry of Transport is a question upon which I prefer not to express an opinion. I may say, however, that if it were to be done effectively by the commission, a considerable measure of re-organization within the commission would be necessary which would probably require additional statutory authority.

Some Advice to Shippers

Shippers generally see the obvious superficial benefits which they gain from intense competition among the railroads themselves or between the railroads and other transportation agencies, but do not perceive so clearly the indirect and more obscure costs which they suffer because of the wastes which are incident to much of that competition. Nor do I believe that many of the smaller shippers sufficiently perceive the fact that many of the larger benefits of unrestrained competition always have accrued and probably always will accrue to the larger and more strategically located shippers. Just as present conditions merit study and research on the part of the railroads, so do they also merit study and research on the part of the shippers. The result, I venture to believe, might be to show the shippers that they would benefit more from co-operation and co-ordination among the railroads and between them and the other transportation agencies than from conditions of open and unrestrained transportation warfare. Finally, I call attention to the fact that the present conditions seem rapidly to be developing various forms of indirect concessions to numerous shippers which savor of the old rebating days, and that under the Elkins act shippers can be equally guilty with the railroads in connection with such offences, which it is the duty of the commission to investigate to the best of its ability.

Another measure of possible railroad relief which I shall pass without extended comment is the suggestion that rates be generally increased. If and when the commission is called upon to consider such a proposal, it will, I am sure, do its best to pass upon it in accordance with the evidence and the law. The prior question which the railroad managements must consider before such a proposal is made to us is whether it is wise and would result in actual gain, especially at a time when all industries are suffering and when no other is contemplating, so far as I am aware, an increase in prices. Do not misunderstand me. This comment is not intended as an implication that such a move is unwise. Upon reflection and consideration of all the facts it may prove to be wise, but the question which I have suggested is an obvious one which the managements must face and decide.

THE BALTIMORE & OHIO MAGAZINE for May is called the Annual Woman's Number; an issue of 145 pages, including the usual material concerning the interests of officers and employees of the road together with numerous articles from the outside. Among the women specially noticed are Lady Astor, the Queen of Roumania, Miss Jane Addams and Miss Anne Morgan; also women in railroad life in Alaska, South Africa, Japan, China and other countries.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended May 9 lost most of the gain of the previous three weeks, amounting to 747,449 cars. This was 27,842 cars less than were loaded in the week before and a decrease of 184,897 cars as compared with the corresponding week of last year, while the decrease as compared with 1929 was 301,511 cars, a greater reduction than has been reported for any week since the depression began. The decrease in loadings this year as compared with the past two years is accentuated, however, by the later opening of lake navigation this year, which has delayed the coal and ore loading. Decreases as compared with both years were reported in all districts and as to all classes of commodities. The reductions as compared with the week before were mainly in coal and miscellaneous freight. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading			
Week Ended Saturday, May 9, 1931			
Districts	1931	1930	1929
Eastern	176,332	215,731	246,204
Allegheny	149,495	193,994	219,954
Pocahontas	42,374	51,925	59,027
Southern	114,174	131,850	142,473
Northwestern	90,594	141,319	163,130
Central Western	110,988	125,857	142,341
Southwestern	63,492	71,670	75,831
Total Western Districts	265,074	338,846	381,302
Total All Roads	747,449	932,346	1,048,960
Commodities			
Grain and Grain Products	35,560	37,492	36,883
Live Stock	22,621	24,278	26,302
Coal	111,599	140,566	156,003
Coke	6,553	9,301	12,646
Forests Products	32,736	53,617	69,330
Ore	10,547	50,209	71,594
Mdse. L.C.L.	226,383	249,244	264,280
Miscellaneous	301,450	367,639	411,922
May 9	747,449	932,346	1,048,960
May 2	775,291	942,674	1,051,935
April 25	759,272	906,879	1,051,885
April 18	760,002	892,706	1,005,880
April 11	737,934	911,316	973,152
Cumulative total, 19 weeks	13,774,498	16,763,164	18,243,565

The freight car surplus for the week ended April 30 averaged 602,832 cars, a decrease of 11,396 cars as compared with the week before. The total included 282,315 box cars, 251,679 coal cars, 28,904 stock cars, and 16,652 refrigerator cars.

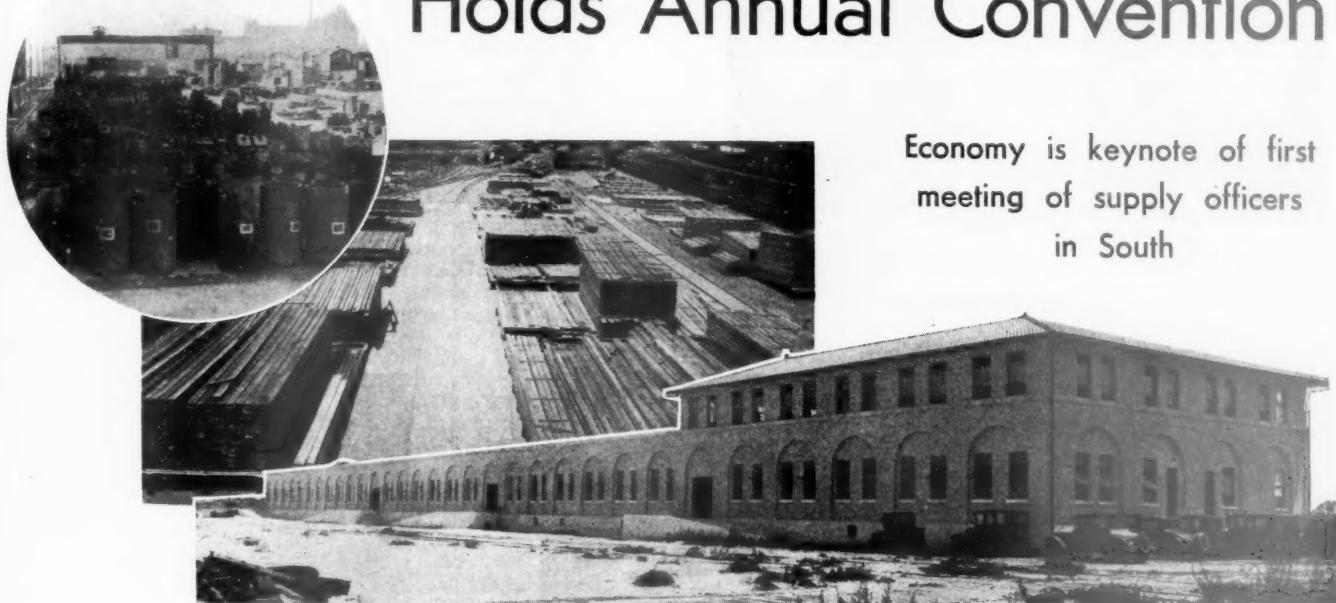
Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended May 9 totaled 49,745 cars, a decrease from the previous week of 3,356 cars and a decrease of 11,281 cars from the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
May 9, 1931	49,745	29,410
May 2, 1931	53,101	31,374
April 25, 1931	50,369	30,896
May 10, 1930	61,026	35,404
Cumulative Totals for Canada		
May 9, 1931	904,772	543,351
May 10, 1930	1,084,636	695,015
May 11, 1929	1,202,457	825,581

INTERCHANGEABLE RAIL AND ROAD TICKETS are now available at some 842 points throughout Great Britain, while increased facilities for making connections between train and highway services at railway stations are tending to transform the latter into "traffic centers," according to Modern Transport (London). In most cases the road-rail tickets are available for either service, at the option of the passenger, but in some instances a small additional fare is charged on trains.

Purchases and Stores Division Holds Annual Convention



Storekeeping on the Central of Georgia (Upper);
Southern (Center); Florida East Coast (Lower)

THE Purchases and Stores Division of the American Railway Association celebrated its twelfth anniversary and at the same time honored the railroads in the South for the support given to the division's work in past years by holding this year's convention in Atlanta, Ga. It is the first time that the association has met in that section of the country and the desire to recognize the work of the southern roads is understood to have been a large factor in influencing the association in holding a full meeting this year, notwithstanding depressed business conditions.

The sessions began at 9 o'clock Tuesday morning under the direction of the chairman, C. E. Walsh, purchasing agent of the Pennsylvania, and continued for three days. They were addressed by L. R. Powell, Jr., receiver of the Seaboard Air Line, and by M. J. Gormley, vice-chairman of the American Railway Association, as well as by Chairman C. E. Walsh, and the proceedings included, in addition to reports from more than 20 committees, special papers on the cost of handling material and on hand-to-mouth buying.

As a result of the election, L. C. Thomson, manager of stores of the Canadian National, was advanced to chairman, and G. E. Scott, purchasing agent of the Missouri-Kansas-Texas, was chosen vice-chairman for the ensuing year. Following are abstracts of the reports and papers presented and the discussion of them.

The sessions were held in the Atlanta Biltmore and were attended by approximately 400 members, guests and visitors, including the executive committee of the Railway Manufacturers' Supply Association.

Address by L. R. Powell

The resourcefulness and efficiency of management in the next 10 years will be the determining factor in the success or failure of our business enterprises. If we can view the present business depression in any sense as a benefit, it is

Economy is keynote of first meeting of supply officers in South

because it has served to bring home to us the realization that economic principles have not changed with seemingly changed conditions and has impressed upon executives and managers in all phases of business that fundamentals cannot be disregarded; as well as serving to make us realize that efficiency of management in all departments is essential to the success of every business enterprise.

The law of action and reaction works inevitably. During the era of prosperity we became obsessed with optimism which caused us to lose sight of that principle. It is just as important, however, that we should not now develop a state of mind which would cause us to supinely accept as inevitable that which may be dispelled by our own determination that the present situation is a repetition of others that have been encountered and overcome in the past. Our country has the same natural advantages, the same virile population, the same minerals, soil and climate that it has always had. We should not lose sight of the fact that in our resourcefulness and energy must lie our main reliance—that the re-establishment of our confidence is the first step in this adjustment.

Economy Urgent

While revenues of Class I railroads of the country in 1930 declined 16 per cent as compared with 1929, their net income declined 30 per cent. This startling result took place in the face of a régime of economy, probably more rigid than has ever been practised in the history of railroading in this country. I want to impress upon the purchasing and supply men the urgent need at this time for the strictest watchfulness, not only in the purchasing of material, but in its distribution. There is not a department in which waste is so difficult to detect as in the purchasing and stores department. It is your responsibility to see that only that material which is absolutely necessary is purchased, that the quality and price are the best that can be secured. It is your responsibility to see that when the material is purchased, it is placed at such points as to be readily available when and where needed, with the least cost for handling, and that all surplus material is promptly returned to the stores department. At this time, more than ever before, the railroads need purchasing and supply men who are great merchants and good executives, and I trust and believe that you will not fail them.

At no time in the history of our railroads has there been such an urgent necessity for the conservation of every dollar, and in no department is there greater opportunity to save or waste money than there is in those coming under your jurisdiction. Within the past decade, you have made enormous



G. E. Scott,
M.-K.-T.



A. L. Sorensen,
Erie



J. L. Bennett,
C. of Ga.



F. S. Austin,
B. & A.



W. J. Farrell,
Secretary,
A. R. A.



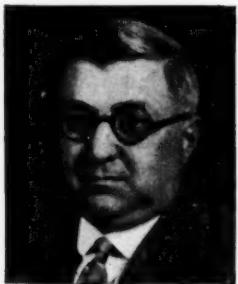
C. E. Walsh,
Chairman,
Penna.



L. C. Thomson,
Vice-Chairman,
C. N. R.



J. E. Mahaney,
C. & O.



C. B. Tobey,
L. V.



C. C. Kyle,
N. P.



G. W. Bichlmeir,
U. P.



E. F. Hasbrook,
C. B. & Q.
Photo Moffett Russell



E. A. Clifford,
C. & N. W.



W. Davidson,
I. C.



J. U. King,
A. C. L.



L. P. Krampf,
M. P.

Officers of Purchases and Stores Division, A.R.A., and Members of General Committee

strides in the economical handling of material. The purchasing and stores departments of the railroads have grown from a subordinate position to one of recognized major importance, all of which has been due alone to the efforts you have made and the results you have obtained.

A Good Time to Investigate

Now is a good time to see whether much of the material ordered by the various departments is as necessary as they seem to think. Take the one item of stationery. Have you convinced your chief executive that many of the expensive forms used by the road could either be eliminated entirely, or combined with others? Have you shown him that the same forms printed on less expensive paper or on more economical shapes or sizes of paper, with one-color ruling, will give him and the rest of his official family just as clear and concise data as they are now receiving, at possibly one-half or one-third the cost?

Each department is jealous of its prerogatives, and does not usually look for suggestions from any other, especially the purchasing department, as to changes in its methods. This is not insurmountable. If you find that you cannot accomplish all that you hoped for, it might be a good idea to enlist the aid of your chief executive. He may possibly agree that the man whom you wish to do this work be transferred to his office, or at least loaned to him, until the survey is completed. I am sure that the results you will obtain will fully justify the effort.

This is a splendid opportunity to effect economies in other directions. When business is good, and every one is occupied in making money, rather than saving it, your offices are probably swamped with rush orders for every class of material you buy. You are not given sufficient time to shop around to see that you get the lowest prices, as well as the best and most suitable qualities. This is also true of every other road. As a result, material men are so rushed with orders that they are possibly not so concerned as they might be with yours. At the present time, the picture is different. In their efforts to economize, the various departments are not calling so freely for new material, nor do you receive so many rush orders. The supply men are appreciative of the value of an order,—even of a small one. All of this gives you an opportunity to try out the habit of "shopping."

Meetings such as these are invaluable. Many individual problems can be solved by the interchange of ideas with other men who are confronted with the same difficulties. I trust that when this meeting is over, you will return with renewed vigor to the task of saving those dollars which, unless closely guarded, so easily escape undetected through your departments.

M. J. Gormley Talks to Meeting

M. J. Gormley, vice-president of the American Railway Association, brought a message of optimism to the convention by reading excerpts from government reports and other documents containing statements written at various periods of history, which were equally pessimistic in their reference to business or other conditions and prospects as the worst statements growing out of the present business depression, but which subsequent developments proved were wrong.

In meeting the present situation, however, Mr. Gormley charged railway officers and railway men, as well as the public, with the responsibility of looking conditions squarely in the face. He took issue with the statement in one of the reports that the ability to load cars of company material to capacity varied with conditions and declared that cars can be loaded to capacity and that capacity loading should be insisted upon in the interest of reduced railway costs. He showed that in one typical instance a shipper was convinced that 14 cars would adequately handle what he had been accustomed to ship in 27 cars, and that heavier loading in another case netted the road \$170 per car increased revenue without inconvenience to the shipper, while the heavier loading of one large shipper's business netted the railroads \$775,000 annually. He expressed the conviction that similar improvements could be made by the railway supply forces in loading their materials and urged them to set a good example for other shippers by attacking the loading of cars in a vigorous way.

R. S. M. A. President Speaks

S. G. Down, president of the Westinghouse Air Brake Company, called upon by the chair in his capacity of president of the Railway Supply Manufacturers' Association, assured the

convention that the railway supply manufacturers realized the plight of the roads and announced that plans were being launched to put their association on a permanently functioning basis to meet more fully the need for closer and a more continuous co-ordination with the railroads in solving pressing problems of mutual concern.

Address by Chairman Walsh

The railroads in their service to the nation are so closely and intimately connected with business, industrial and agricultural life that they are almost a barometer of business conditions. If the railroads are prosperous and have money to spend, the whole nation benefits by increased facilities, better service and by the purchase of increased quantities of materials and supplies. On the other hand, if the railroads are barely able to make both ends meet, the country is affected adversely in like manner.

During this period of reduced revenues it is the duty of all of us to utilize all avenues, connections and opportunities to improve our methods and practices, so that the greatest net economy to our railroads may result. Division VI, with its widespread organization and personnel offers exceptionally favorable opportunities by which all interested may be fully informed of the latest developments in practices affecting our purchasing and stores departments.

During the past several years the methods and procedures recommended and adopted by the Division have made for increased efficiency and greater economy in the operation of the purchasing and stores departments of the railroads. The Division will continue to offer constructive recommendations for the better purchase and control of materials.

Low purchase prices of materials and reduced inventories should not be the only aims of purchasing and stores department officers and employees. As contact men with the industries and the general public, through the high type of supply men with whom we are in daily touch, we are afforded a wonderful opportunity for clarifying any misunderstandings that may exist in the minds of the public concerning the general railroad situation. I do not know of any railroad department that has a better opportunity to improve public relations than have the purchasing and stores departments through the railroad supply men. As officers and employees of the purchasing and stores departments of the railroads we should think as stockholders of gross earnings, expenses and net, but in so doing we must not overlook the all-important subject of having our relations with the business world through contacts with sales and manufacturers' representatives, on a high plane of courtesy and fair dealing. This is just as important as to make purchases at favorable prices and maintain minimum stocks of material.

The importance of the work of Division VI, A.R.A., increases each year. Most of its recommendations enunciate fundamental principles which may require some modification before going into practical effect on the various railroads. Such modifications are the problems of the individual carrier but before rejecting any of the fundamentals included in the reports, careful and fair trial should be given them.

Scrap Handling and Reclamation

To provide a means for the proper interpretation of the A. R. A. Scrap Classifications, the committee recommends the establishment of a Scrap Arbitration Committee. Member railroads should report complete descriptions of all claims arising from interpretations of the scrap classification, together with a statement of the settlement made in each case. The cases will be numbered and the decisions will be furnished to the railroads, the name of the railroad not being given.

The committee again stresses the importance of gaging, testing and inspecting reclaimed material, in order that there may be no doubt about the quality and workmanship.

Welding Manganese Frogs and Crossings—On one railroad the frogs are given a rigid inspection to determine if it is practical to weld. The surface is cleaned with a wire brush and grinder. If any fractures appear in the casting, a grinder is used to remove the metal. In deep fractures the carbon arc is used to remove the excess metal, after which the surface is ground. A piece of iron from 1½ in. to 2 in. in diameter is placed under the center of the frog, and the ends of the frog are clamped to reduce the possibility of the frog warping while being welded.

The new metal is deposited by a current of from 60 to 70 volts, and 180 to 200 amp. reversed polarity, using a 3/16-in. high-manganese coated rod. The electrode is placed in the

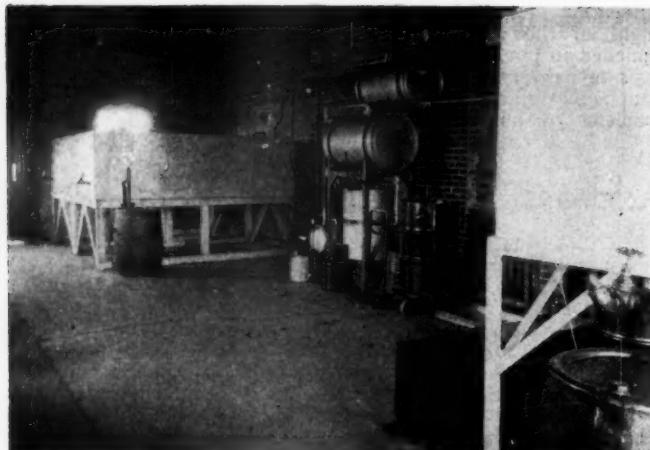


Exhibit F—New Plant Where Crank-Case Oil is Reclaimed at Low Cost

electrode holder, so that it is held in the center of the rod, allowing one-half to be deposited at one time. As the metal is deposited, it is hammered by means of a pneumatic tool. This is continued until the bead loses its heat. The bead is applied in semi-circles $\frac{3}{4}$ in. wide. After hammering, it is brushed with a wire brush before new metal is applied. Care must be taken in welding not to overheat the old metal. This can be avoided by laying one electrode on each spot and welding at another point, and continuing this operation until the casting is built up to the proper height.

Reclaiming Crank-Case Oil—The 1930 report of the committee included a list of railroads reclaiming drainings from automotive equipment. The cost of reclaiming this oil varied from .084 to .39 cents per gal. Information received from the same railroads this year shows practically the same difference in cost.

Reclamation of crank-case oil has been attempted in various ways with indifferent success. Filtration has been tried as the simplest method. This is difficult, however, as any medium fine enough to do more than remove the coarser dirt becomes clogged, and acids cannot be removed by filtration. Some other process of reclamation is necessary to produce oil of equal quality to the original oil. There are two outstanding processes on the market for this work.

Exhibit F shows a plant which was planned to reduce operating costs to a minimum. The output averages 4,370 gal. of refined oil per month at a cost of \$.102 per gal. The oil is sent to the oil reclaiming plant in the same shipping drums in which the new oil is received. It is pumped from the shipping drums by a small motor-driven pump into two 1,200 gal. settling tanks equipped with steam coils. It is then heated to 115 deg. F., and allowed to settle. While the oil in one tank is heating, the oil in the other tank is drawn off from the top into a battery of 50-gal. tanks where chemicals are applied.

During treatment the oil is agitated with a small motor-driven

portable agitator and after treatment it is allowed to stand 24 hr. It is then drawn from the treating tanks into the pre-heating tank where it is heated to 150 deg. F. The pre-heating reduces the time of the oil in the refining machine approximately one hour. The oil is then pumped into the retort of the refining machine and is heated to 550 deg. F. It is then drawn by vacuum into a tank above the retort from which it flows into the filter tanks. After the oil is filtered it is pumped into one of the 500-gal. storage tanks. When the tank is full the contents are analyzed by the engineer of tests. Shipping drums are filled by gravity from the storage.

A statement of crank-case oil reclaimed at this plant from May 20, 1930, to February 1, 1931, follows:

Crank-case drainage	44,200 gal.
Saved 36,403 gal. crank-case oil	\$13,967.93
Saved 3,852 gal. light fuel oil	144.79
Cost of chemicals	\$14,112.72
Cost of electric current	\$1,589.60
Cost of water	539.19
Cost of labor—3,125 $\frac{3}{4}$ hrs. at \$0.47 per hr.	117.36
	1,469.11
Net Saving	\$ 3,715.26
	\$10,397.46

Exhibit H shows another type of machine and process used on several railroads with good results. On one railroad the following results were obtained during 1930:

Average cost per gal.	\$.1002
Material used—chemicals	\$478.30
White waste	44.64
Wiping cloths	7.07
Percentage usable oil recovered	96.92

The oil is first treated hot with a small amount of an inexpensive chemical, followed by the addition of an equal amount of silicate of soda solution. The sludge settles in a few minutes, and sinks into an underlying body of water which is constantly being replaced by fresh water.

The diluents are removed by passing the clarified oil in a thin film over electrically-heated plates in a current of air. The plant is designed for 24-hr. operation, the only attention required consisting of filling the receiving tank with crank-case drainings, filling the chemical containers, and draining the refined oil from the collecting tanks once during that period.

[The committee consisted of T. J. Hegeman (chairman) supt. rec. C. B. & Q.; I. C. Bon, supt. rec., Wabash; J. J. Collins, supt. of rec., Erie; T. S. Edgell, div. storekeeper, Mobile & Ohio; W. B. Gordon, asst. gen. storekeeper, Can. Nat.; J. C. Kirk, asst. gen. storekeeper, C. R. I. & P.; G. W. Lieber, supt. rec., M.-K.-T.; A. L. Prentice, supervisor of scrap & rec., N. Y. C.; H. M. Rainie, asst. pur. agt., B. & M.; B. W. Roberts, gen. pur. agt., Can. Pac.; W. P. Stewart, supervisor of scrap, Ill. Cen.; E. A. Workman, man. pur. and stores, C. of N. J.; C. B. Tobey, (chairman ex-officio) gen. storekeeper, Lehigh Valley.]

Discussion—C. D. Baldwin (Bang. & Ar.) approved the committee's plan to establish a scrap arbitration committee, stating that questions frequently arise with scrap dealers, particularly where shipments of railroad scrap are rejected by the mills and that the experience of each road, if brought to the attention of the other roads through the activities of such a committee, would be a valued aid in correcting misunderstandings and improving conditions and practices.

J. U. King (A.C.L.) stated that for the past six years the Atlantic Coast Line has been welding manganese frogs successfully but emphasized the importance of carefully inspecting the frogs before repair and also pointed out that his road had found it desirable to keep the repaired frog in the clamps over night. The Atlantic Coast Line uses a bare rod containing 15 per cent manganese for the welding work.

Joint Committee on Reclamation

The committee has studied the design of many brake beams now in service, referring particularly to the failures of various parts, and to parts which are not interchangeable. The illustrations show representative conditions of defective freight car brake equipment.

Welded Couplers—The welded couplers and parts shown in the 1930 report have been in service for one year. The equipment has been subject to all kinds of loading and handling, including that in hump classification yards. To date, no failures have developed. The couplers show normal wear and conditions. They compare favorably with new couplers in the same kind and length of service. One railroad, four years ago, applied 200 welded couplers and parts to system ballast cars that would not be handled in interchange. A record of welding was kept of each individual coupler. In addition to this, each coupler was marked with a steel stencil date. To date one coupler has been removed because of wear on the coupler shank by the carrier iron. The data prove conclusively

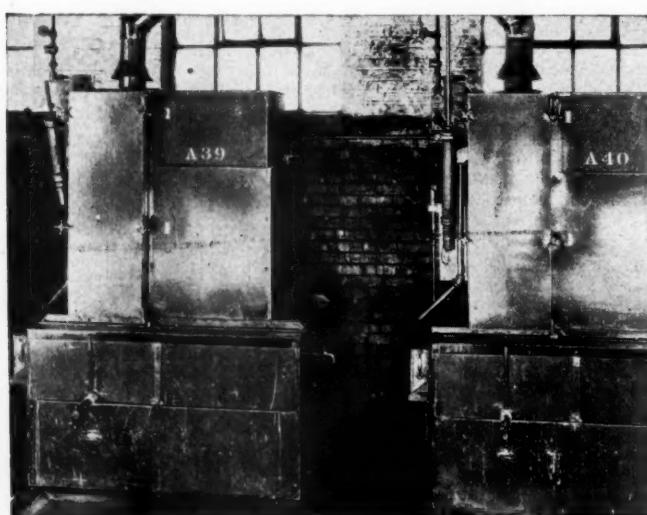
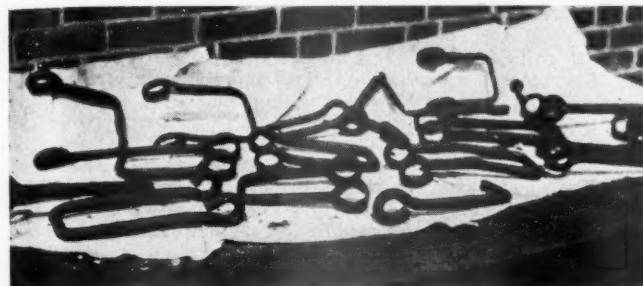


Exhibit H—Another Approved Type of Oil Laundry

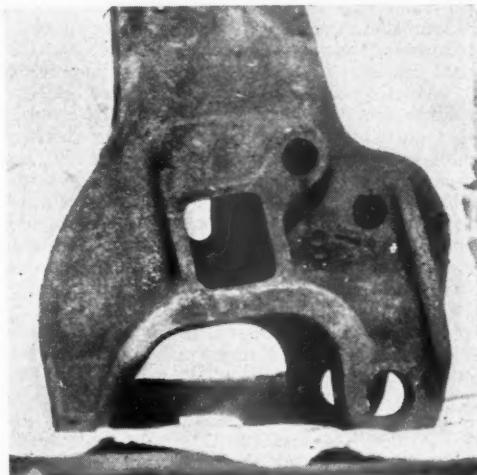
that the welding of certain fractures in couplers is a successful and profitable operation.

Marking Old Material—Most reclaimed and second-hand material is painted or sprayed for protection and, when properly repaired, it is impossible to detect it from new material unless it is marked in some manner. By using the paint color scheme and dotting item of material, many discrepancies will be eliminated, and the cost will be much less.

Freight-Car Axles—As a result of recommendations included in the 1930 report, the Mechanical Division committee has



Brake-Beam Hangers Showing Light Construction and Wear



Coupler With Welded Face and Shank After Year's Service



Mild Steel Brake-Beam Rods Showing Breakage at End

recommended that the condemning limit for journal length of axles should be increased. This has been accepted and the new limit is shown in the Interchange Rules. The increased journal length is harmful to the life of the brake beam, and permits increased lateral motion to brake and truck foundations. The brake and truck foundations are most important, for the reason that considerable freight car equipment is being dispatched on express train schedules and some of the present design and construction carries a high maintenance cost.

Helical Springs—Accumulative reports have been received from various railroads indicating satisfactory service from re-

claimed helical springs. One railroad reports savings effected by reconditioning 5,160 helical springs at its plant, as follows:

66.7 tons spring steel at \$10.75 per ton	\$717.03
New value of springs	4,045.80
Cost of material to repair	\$86.32
Cost to repair	386.03
Value of scrap spring steel	717.03
	1,189.38
	\$2,856.42

Cost per ton to recondition \$ 7.08

[The committee consisted of: (Div. VI representatives) I. C. Bon (chairman), supt. of rec., Wabash; G. W. Lieber, supt. of rec., M.-K.-T.; A. L. Prentice, supervisor of scrap and rec., N. Y. C.; W. P. Stewart, supt. of scrap, Ill. Cen.; (Div. V representatives) J. W. Bukey, for. rec. plant, P. R. R.; L. R. Wink, asst. supt. of the car dept., C. & N. W.]

Discussion—The report was accepted without discussion except for the question from D. R. Elmore (F.G.Exp.), as to whether any exception had been taken to the use in interchange of the couplers welded as described in the report. The chairman replied that the couplers were still under experiment and that such questions would be handled by the arbitration committee of the Mechanical Division.

Scrap Sales

The total value of sales of scrap by the railroads is sufficiently large to justify the utmost care so that the companies will be protected against losses. Scrap or usable material of greater value has been loaded in the same car with and under scrap of low value. Non-ferrous scrap removed by trucks under sales orders has been found to weigh considerably more than indicated by the weight reported by the railroad representatives; this was accomplished by substituting counterfeit weights on platform scales. Scrap has been loaded and shipped, but bills of lading destroyed or lost before invoices were prepared.

Changes in Rules—A monthly report should be made to the purchasing agent by the general storekeeper, on a fixed date of each calendar month, showing the quantity of scrap by classes which will be available for sale during the next 30 days, in addition to that already reported for sale. The scrap reported should include rail and any other scrap on each operating division which is to be sold direct, as well as scrap at concentration points. When it is found, after the regular monthly report is made, that the accumulation of any scrap is unusually large a special intermediate report should be made with a request on the purchasing agent that a special sales order be furnished. This applies particularly to sales of bridge material, old car bodies, etc., where information was not available at the time the regular sales were made.

Scrap Bids—The purchasing agent should solicit bids from all firms on the approved list and fix a closing date, beyond which bids will not be considered. Bidders should not be added to the approved list without full investigation as to their reliability. Authority should be obtained from the purchasing agent before scrap is sold to any outside party. The officer should furnish the price and terms of sale when the authority for the sale is given.

When it becomes necessary to load material into the same car at two or more points, the storekeeper completing the load should obtain a weight certificate from the initial storekeeper, giving the light weight of the car, and make a sales bill to cover the entire shipment.

Relations with Buyers—The committee recommends the observance of the following principles in handling scrap sales:

Bidders should not be given the opportunity to inspect scrap sold under classification prior to shipment. The railway companies should reserve the right to ship scrap from any point it may select providing the shipment agrees in class with that sold. This rule, however, should not be applied in the case of scrap not classified, such as bridges, turntables or other similar material which might be shipped directly as loaded.

The delivery of scrap material by automobile truck should not be permitted.

Surprise checks should be conducted at proper intervals by reweighing the shipments made under sales orders.

The invoice covering each shipment should be prepared immediately after the scale weights are available.

[The committee consisted of R. C. Harris, (chairman), gen.-storekeeper, P. R. R.; D. W. Corcoran, gen. storekeeper, C. & N. W.; H. P. McQuilkin, asst. pur. agt., B. & O.; G. E. Scott, pur. agt., M.-K.-T.; A. L. Sorensen, man. stores, Erie; F. S. Austin (chairman ex-officio), pur. agt., Boston & Albany.]

Discussion—A spirited discussion arose over the committee's recommendation that scrap dealers should not be permitted to

inspect scrap sold under classification prior to shipment. C. D. Baldwin (Bang. & Ar.), could not see the objection to permitting the scrap man to inspect what he buys, adding that a railroad would hardly wish to buy material on that basis and would not feel kindly to the manufacturer taking such a position toward the railroad. He was supported by E. A. Clifford (C. & N.W.), who replied to the explanation by Chairman R. C. Harris (Penna.), that the recommendation was made with a view to encouraging the sale of ordinary scrap under standard classifications, with the remark that classifying scrap is not a science. C. E. Smith (N.Y., N.H. & H.), advocated that the recommendation should be to allow the scrap buyer to inspect the material, but C. B. Tobey (L.V.), supported the committee with the argument that scrap could be sold by classification and that every road should follow that practise.

T. J. Hegeman (C. B. & Q.), added that the Burlington has been selling scrap for ten years on that basis, and H. M. Rainie (B. & M.), explained that scrap upon which the buyer bids is anticipated and not available at the time of sale. L. L. Studer (M.P.), stated that to allow the scrap buyer to inspect scrap would slow up the movement of the material. J. G. Stuart (C. B. & Q.), said that such a practice would increase the cost of handling in other ways. J. C. Kirk (C. R. I. & P.), stated that the Rock Island had been selling its scrap for many years without having it inspected prior to sale. P. L. Grammer (Penna.), reported that the Pennsylvania had found it highly undesirable to allow scrap dealers to inspect scrap before shipment and the committee's recommendation, put to a vote, was sustained.

A similar controversy arose over the recommendation that scrap should not be removed in highway trucks. The experience of one road indicated that such a practice sometimes leads to irregularities which are difficult to control and detect. In some cases higher bids are offered for truck shipments than for the same tonnage in cars. The committee's recommendation was sustained.

Railway Inventories

On September 24, 1930, regional committees checked reports of railroads which had not submitted semi-annual reports as of June, 1930, and arrangements were made to trace these roads with a view to having the report submitted at once, and, if possible, thereafter regularly.

To eliminate, in-so-far as possible, questions which have frequently arisen relative to the consolidated stock report, the committee agreed that the individual reports should be passed on by the various regional committees before printing in consolidated form.

The June, 1930, figures were distributed among the various regional committee chairmen, who were to investigate with the proper officers any discrepancies in the report, for the purpose of having them corrected, or explanatory notes made and the reports returned to the secretary by October 15. It was further decided that future reports would be submitted by the secretary to the regional committee chairman, as received, for the same procedure.

The committee recommends the re-grouping of the 12 items in the material stock report, eliminating from the first group of 11 items, ties, rail and fuel, and setting up ties, rail, fuel and scrap as a separate group representing classes of material which, on many roads, are not directly controlled by the stores department.

The committee again directs attention to the fact that the material stock report should include all unapplied material on hand, even though it may be the practice for certain line stocks to be carried under the jurisdiction of the using department.

The following indicates the results of the last three reports. Figures for December 31, 1930, are not yet available.

	June 30, 1929	December 31, 1929	June 30, 1930
No. of railroads reporting.....	56	82	86
Mileage of railroads reporting.....	136,421	171,191	158,574

While the number of railroads reporting June 30, 1930, increased by four over December 31, 1929, there was a decrease in mileage of reporting roads of 12,617 miles.

Several railroads, which are active in the association, have not yet submitted figures for the consolidated report. However, the committee endorses the report as of definite aid in the development of stores practice and recommends that future committees keep enlarging upon the results obtained.

During the year, several questions relating to interpretation of the accounting classifications have been referred to the com-

O. A. Donagan, gen. storekeeper of the Boston & Maine, is chairman of the committee.

mittee for opinion. These are being considered with the Railway Accounting Officers' Association.

Discussion—The report indicating difficulty in getting stock reports voluntarily from all the roads, E. A. Clifford (C. & N.W.), suggested that the co-operation of M. J. Gormley, vice-president of the American Railway Association be obtained and Mr. Gormley, having heard the discussion, expressed his interest in that venture.

Forest Products

Of 18 railroads and car companies, two reported the use of 25/32-in. stock for car siding, lining and roofing. One of these roads avoids paying a premium and secures better delivery, and the other reported a saving of \$1 to \$5 per 1,000 bd. ft.; some of the saving is on transportation. One road uses $\frac{3}{4}$ -in. stock, believing it to be cheaper than 25/32-in. The others use 13/16-in. because it is the present standard, but four of the roads recommend 25/32-in. The committee recommends the general use of American lumber standards in cutting and dressing lumber for railroad purposes.

How to Store Hardwood—The committee stresses the importance of keeping all lumber properly piled in lumber yards or sheds, preferably the latter, until thoroughly seasoned before used for any purpose. A cover of boards should be placed over each exposed pile. It is common practice in the hardwood lumber industries, as well as in railroad yards, to paint the ends of hardwood timbers. This should be done as soon as possible after the timber is manufactured and inspected. Much good could be accomplished by applying S-irons to large timbers when the first signs of checking appear. If excessive checking has been permitted to develop, S-irons will probably not prevent further damage.

A questionnaire to 42 roads on seasoning forest products in buildings brought replies from 35. Only eight of the roads have a set standard for piling forest products and only two have attempted to season in the green state under cover. Seasoning under cover will greatly minimize loss, and roads should carefully consider providing suitable sheds for this purpose.

Housing Finished and Kiln-Dried Lumber—The protection of lumber has become more important, because of the recent action of the Mechanical Division, A. R. A., in adopting standard lumber sections based on a fixed moisture content. The National Lumber Manufacturers Association recently made a survey of the handling and protection of railway car lumber on Class I railways east of the Rocky mountains. A lumber technologist visited the various railroad lumber yards and discussed the problems with those in charge. He found that, as a rule, car lumber was only partially protected from the elements. It was stored in well protected enclosed sheds in only a few cases. On some large railroads kiln dried lumber was being unloaded and piled out-of-doors without protection from the weather.

West Coast Hemlock—The committee suggests that before substituting hemlock for other species, steps should be taken to determine if it will be equally satisfactory.

Finished and Rough Lumber—All car lumber purchased air dried or kiln dried should be dressed at the point of manufacture. The cost of dressing, at the point of shipment, is usually considerably less than at railway shops. The saving in freight by purchasing lumber dressed at the point of shipment amounts, in the case of lining, siding and roofing purchased on the Pacific coast for delivery in the Chicago district, to approximately \$3 per 1,000 ft. b.m.

Dressed clear lumber can often be purchased considerably cheaper than the same lumber in the rough. This applies particularly to Douglas fir. Green car lumber, with the exception of car sills and framing, should be purchased rough and dressed by the railway only after it has been thoroughly dried.

Modern Dry Kilns—Many consumers who perform drying are still using antiquated dry kilns and old-fashioned drying methods lacking in one or more drying essentials—temperature, humidity and circulation. These three requisites and their proper combination and use are necessary to modern kiln operations.

Testing Methods—In 27 replies to the question of what method of testing kiln lumber was employed, 12 indicated none, 8 the oven test, 4 judgment of inspector, 1 inspection by mechanical department, 1 boring and weighing and 1 by mills having moisture meter. The various types of apparatus being used cost from \$22.50 to \$400.

Tie Specifications—Of the 67 questionnaires issued to determine the extent A. R. A. grading rules are being followed in purchasing cross ties, replies were received from 60 roads, aggregating approximately 226,000 miles of line.

The variations in the sizes of cross ties, purchased by reporting railroads are indicated in the following tabulation:

Sizes of Ties Purchased	Miles of Line	Percentage, Total Miles of Line Reported
0-1-2-3-3A-4-5-6	4,152	1.8
0-1-2-3-4-5	1,052	.5
0-1-2-3-3A	614	.3
1-2-3-3A-4-5	55,434	24.7
1-2-3-4-5	54,283	24.2
1-2-3-4	1,496	.6
1-2-3	2,901	1.2
2-3-3A-4-5	11,739	5.1
2-3-4-5	5,650	2.4
2-3-4	407	.2
2-3-3A	453	.2
3-3A-4-5	3,083	1.3
3-4-5	21,515	9.5
3A-4-5	228	.1
3-5	7,030	3.1
4	8,372	3.6
5	1,921	.9
Not conforming	45,669	20.3
	225,999	100.

The fact that few roads purchase size O and Size 6 ties is notable. Although Size 6 is not specified, many roads accept ties of this size as Size 5. Likewise Size 3A is accepted as Size 3 by roads which omit Size 3A in listing the sizes of ties desired. Those roads indicated above as purchasing ties which do not conform to the A. R. A. specifications are in general using only two sizes of ties, corresponding to the pre-war classifications of No. 1 and No. 2 ties.

The specification of the engineering division as approved May 19, 1926, states that each railway will specify only the length or lengths, shape or shapes, sizes or size it desires to use, but each railway will use the standard designation for whatever size of tie it specifies. In practice, this is not being followed, in that a number of roads are in reality following the pre-war designation.

Another fact is that while a railroad, for example, is apparently accepting ties of the TA group, it is rejecting species in that group considered inferior. They are justified in doing this, for while the ashes and hickories may have the required strength and other physical characteristics, conditions such as prevailed during the World War are required to make these species appear favorably when compared to the oaks, black walnut, and locust. Therefore, the railroads which are religiously adhering to the specifications are forced to accept ashes and hickories that have been rejected by other roads.

The committee consisted of F. V. Weisenburger (chairman), tim. agt., Nor. Pac.; James Deery, asst. pur. agt., P. R. R.; D. R. Elmore, asst. to gen. man., Fruit Growers' Express; T. W. Harris, asst. pur. agt., Can. Nat.; H. W. Herbert, lumber buyer, Ill. Cen.; F. S. Hillier, tie and tim. agt., N. Y., C. & St. L.; J. C. Harkness, tie and tim. agt., St. Louis Southwestern; J. R. McGrenara, gen. tie and lum. insp., A. T. & S. F.; J. E. McNelley, chief tie and lum. supervisor, A. C. L.; C. C. Warne, pur. agt., N. Y. C.; C. C. Kyle (chairman ex-officio), pur. agt., Nor. Pac.]

Discussion—The discussion was confined to a question by W. Davidson (I.C.), over the reason for the wide variation between the specifications of different groups regarding the requisite moisture content of lumber, to which D. R. Elmore (F.G.Exp.), replied that the moisture content considered by the Purchases and Stores Division was that specified by the Mechanical Division.

Manufacturing in Railway Shops

The stores department should be free from the mechanical department's influence in placing orders for manufactured material. Close co-operation, however, is necessary in determining quantities to be manufactured, spacing of orders, time of delivery of raw material, time required to manufacture finished material and quantities to be ordered to insure economic output to supply peak demands. The supplying of peak demands can, in a large number of cases, be economically taken care of by manufacturing monthly a uniform quantity of material, the excess manufactured during periods of low consumption to be used in building up a surplus for use when the demands exceed the output of the manufacturing equipment. This procedure of placing orders based on the average monthly consumption, results in the saving of investment in additional machinery to provide output to meet the maximum demands.

The cost of manufactured material should be based on accurate accounting and should include all costs as used by the manufacturers of purchased materials, except sales cost, advertising and profit.

If the outside manufacturer can under-bid the shop, overcoming the odds of sales cost, advertising and profit by the use of more improved methods of manufacture and handling, or due to larger quantity production of items common to all railroads, and possibly other industries, he should have the business. If the shop, after including all costs except sales, advertising and profit, can meet or better the manufacturer's

price, and produce a quality of material equal to that demanded of the outside manufacturer, and in quantities that will not produce an excessive stock, which means excessive carrying charges and possible loss due to obsolescence, it should get the order.

The stores officer should be constantly comparing the costs of manufactured and purchased materials so as to procure materials at the lowest cost. He is bound to assist the shop management in every possible way to reduce the cost of manufactured material. He can assist greatly by supplying raw materials, or finished parts to be used in the manufacture of material, in proper quantities and at the required time, so as to prevent double handling and storing. For example, when sheet steel is delivered monthly to the shop for fabricating car parts, it should be scheduled to arrive at the shop so that it can be taken direct from the cars to the shop; likewise, the finished material should be taken from the machine direct to the cars for shipment to points of consumption.

At the present price of labor, an extra handling or two of a piece of material adds greatly to its cost. Any help given the shop in reducing the cost of an item of material is that much gained and might result in procuring lower prices from the outside manufacturer.

From a stores department standpoint, which should be that of the stockholder, it devolves upon the shop management, as well as the outside manufacturer, to prove its case as to which shall furnish the materials to be consumed.

The committee consisted of E. B. DeVilbiss (chairman), asst. stores man, P. R. R.; J. C. Baker, trav. storekeeper, Southern; E. E. Huff, Sup. of Mat., N. & W.; J. Maier, storekeeper, C. B. & Q.; C. A. Marshall, div. storekeeper, C. of N. J.; A. Schipper, gen. insp. of stores, So. Pac.; G. J. Hunter, trav. mat. insp., A. T. & S. F.; E. A. Clifford (chairman ex-officio), gen. pur. agt., C. & N. W.

Discussion—The discussion was limited to a question by J. G. Warnecke (I.C.), as to whether the committee had considered having the shops properly identify by pattern number or other means all manufactured material. He emphasized its importance in periods when the lapse of time from the ordering of shop-made material to its receipt might cause serious confusion in the stores if not so marked.

Economical Buying

Material requirements should be anticipated sufficiently to allow the purchasing department to secure the best purchase price. This refers particularly to A. F. E. items, also pre-determined maintenance projects or contemplated car or locomotive programs.

Blanket Orders—Where the source of procurement can be definitely decided by the purchasing agent on selected material for a given period of time, say, three months or more, a blanket order could be placed for that period, or it may be desirable to use an estimate of the requirements and to have the material delivered only as required and ordered direct by the storekeeper on the firm holding the blanket order by using a convenient release order form. The economies effected by such a plan are:

A reduction in stock and increased turnovers.

A reduction in clerical work.

A reduction in the number of invoices and vouchers issued.

A reduction in the time between the writing of the requisition and the placing of the order by the purchasing agent.

Order in Quantities—Strict attention should be exercised in ordering such items as bar iron and steel shapes, etc., and malleable and steel castings, to see that the minimum mill or foundry prices are obtained, and standard commercial packages should not be overlooked. The development of this plan should be carefully scrutinized to see that ordering points are restricted so that maximum quantities may be ordered. Consideration must be given to back haul on the heavier items and the cost of rehandling by the distributing stores.

To insure orders being placed promptly on stock requisitions, it is urged that purchasing departments maintain a working price arrangement, as far as possible, with manufacturers or jobbers to expedite placing orders.

A. F. E. Material—On program and A. F. E. work, careful consideration should be given to the direct shipment of materials to the point of use. This particularly applies to carload lots, or large items of material like cast iron or concrete pipe, heavy beams, large stone, and brick, etc. Small items should be shipped to base stores and forwarded to the point of use when the complete assembly is available and when the material is required for the progress of the job.

The committee consisted of A. E. Owen (chairman), asst. pur. agt., P. R. R.; R. R. Jackson, div. storekeeper, Wabash; L. L. King, asst. pur. agt., Ill. Cen.; C. D. Longsdorf, asst. gen. storekeeper, N. Y. C.; W. H. Morris, gen. storekeeper, Reading; C. H. McGill, supply train storekeeper, N. Y., N. H. & H.; E. H. Polk, div. storekeeper, So. Pac.;



C. D. Baldwin



I. C. Bon



William Courage



R. D. Crawford



E. B. DeVilbiss



E. J. Dennedy



O. A. Donagan



L. F. Duvall



P. L. Grammer



R. C. Harris



T. J. Hegeman



R. R. Jackson



E. J. Lamneck



H. N. Mellor



W. S. Morehead



O. Nelson



A. E. Owen



L. R. Powell



E. G. Roberts



T. H. Ryan



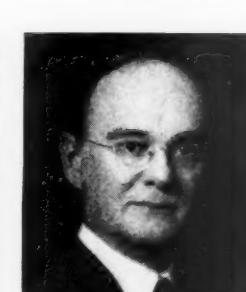
J. L. Sullivan



J. T. VanHorn



F. V. Weisenburger



L. B. Wood

Photo Moffett Russell
C. W. Yeamans

Committee Chairmen, Authors of Papers and Addresses, and Contest Winners—Purchases and Stores Division, American Railway Association

A. S. Thompson, pur. agt. and storekeeper, Columbus & Greenville; F. S. Austin (chairman ex-officio), pur. agt., Boston & Albany.]

Discussion—The committee's approval of blanket orders for purchasing supplies under which the stores are permitted to place orders directly with the manufacturers, met with divided opinion. Chairman Walsh said in reply to questions that proper policing of the orders was essential to avoid surpluses, but that the stores of the Pennsylvania favored the plan and that delivery dates are insisted upon. The purchasing department notifies the shipper of the delivery dates but the stores do the tracing.

C. B. Tobey, Lehigh Valley, reported a similar practise, except that the general store releases the material instead of the local stores. The plan on the Lehigh Valley has speeded up deliveries about a week and has resulted in large savings in clerical work. According to R. R. Jackson, points on the Wabash which once carried 1,500 car wheels per month are now operating with 300 wheels in stock under such a plan.

E. A. Clifford, Chicago & North Western, questioned the statement of R. C. Harris, Pennsylvania, that such a plan would make the storekeeper more responsible for material, adding that an experience some 15 years previous showed that storekeepers got into the habit of simply repeating the previous month's orders in releasing material under blanket contracts.

The use of blanket orders is restricted in the west. J. G. Stuart, Chicago, Burlington & Quincy, explained, by the distance of the roads from some of the markets and the necessity of taking freight rates into consideration in all shipping. The blanket order functions well with foundries on the home line, however, and invoices are made on a monthly instead of a weekly basis.

Supplies for Bus Operation

The activities of the committee were directed toward the establishment of a material classification which would suit the requirements of bus companies. Such material, with few exceptions, is foreign to steam railroads and an attempt to assimilate the various items with the present classified arrangements would be an endless task and ultimately end in confusion.

On June 30, 1930, 32 Class I railroads were operating over 33,187 miles of intrastate and 23,040 miles of interstate routes, 2,887 buses and 8,551 motor trucks. In the first six months of 1930, they operated 58,707,886 motor coach miles, carrying 34,113,361 passengers, with a property investment of \$40,048,607.

The committee agreed that the classification adopted in 1930, providing for six classes of material was inadequate and a new one was written, consisting of 15 classes. This was submitted to 29 motor bus companies, which were unanimous in its adoption, with few changes.

The recommended classes are:

- Class 1—Fuel
- Class 2—Lubricants
- Class 3—Tires, Tubes and Rubber Goods
- Class 4—Engine and Parts
- Class 5—Power Transmission
- Class 6—Chassis
- Class 7—Lighting and Ignition System
- Class 8—Brakes
- Class 9—Body Parts and Upholstering
- Class 10—Tools and Equipment
- Class 11—Paint, Painters Supplies and Cleaning Material
- Class 12—Bolts, Nuts, Rivets, Washers, etc.
- Class 13—Bar Iron, Steel, Pipe, Metals, etc.
- Class 14—Lumber
- Class 15—Miscellaneous Scrap

The committee submitted a detailed list of the materials to be included in each class.

[The committee consisted of J. L. Sullivan (chairman), gen. trav. storekeeper, U. P.; G. W. Alexander, gen. storekeeper, C. of Ga.; W. M. Hinkey, dist. storekeeper, B. & O.; J. T. Kelly, gen. storekeeper, C. M., St. P. & P.; Frank McGrath, trav. storekeeper, B. & M.; C. L. McIlvaine, asst. pur. agt., P. R. R.; H. C. Ralls, dist. storekeeper, M. P.]

Cost Records For Handling Material

By R. R. Jackson*

A measure of some kind should be provided to enable railroads operating under similar conditions to gage their efficiency and to discover abnormal handling costs by comparison.

A uniform plan should be adopted for studying costs. Cost record cards should be maintained showing the expense of unloading or loading various commodities. These should show the time losses in preparing material for storage, removing dunnage

* Division Storekeeper, Wabash, Decatur, Ill.

age from cars, handling rejected portions of shipments, interruptions from switching when cars are unloaded or loaded from and on live tracks, and the time losses from inclement weather and other elements that increase the normal cost of handling. These costs should not be included as an unloading cost in statements made for comparison but could be used to advantage by the supervisory force for investigation and correction. It should not be necessary to compute costs on every car of each kind of material; but sufficient operations should be studied currently to arrive at a fair average cost for each of the various commodities handled during a given period.

A list of material should be prepared showing the unit to be used in expressing the costs for each class. It should show the cost of unloading or loading from open and closed equipment and by hand, crane or other special facility. The cost of unloading or loading of lumber should be separated to show the cost for cars containing three or less sizes and the cost for cars containing more than three sizes in a car. The record should also show the cost of handling oak, pine or fir and could be further developed to show separate costs for siding, roofing, lining, decking, switch ties, grain doors, etc.

The cards when properly filled out, studied by commodities and compared between various stores on the railroad or by different railroads will soon emphasize the need for a change in methods or the purchase of special handling equipment and will prove of inestimable value in arriving at the saving which might be made with different handling methods. [Mr. Jackson's paper also included a discussion of the items to be included in cost of handling statement.—EDITOR.]

Fuel Buying

The railroads purchased 97,857,093 tons, or 21 per cent of all the coal mined during 1930. This represented an expenditure, excluding direct freight charges, of \$228,985,598. They also purchased, during the same year, 2,320,252,497 gal. of fuel oil, representing an expenditure of \$45,376,949. It took the entire gross earnings of the railroads the following number of days to pay for their fuel:

1925	1926	1927	1928	1929	1930
27	24	24	23	21	19

After a discussion by the eastern carriers on March 26, 1930, the following principle was adopted by the eastern roads, and subsequently concurred in by the presidents of other railroads: "That in the purchase of all railroad fuel coal, direct contractual relations be established between the railroads and producers or recognized coal sales agents who will furnish their authority for their quotations and place their orders direct with the producers. That the spread between the maximum and minimum requirements in railroad coal contracts be reduced to a minimum."

Grades of Coal—Run-of-mine coal has been the standard fuel on coal-burning railroads. Modern industrial trends, however, have made it advantageous to consider especially-prepared or sized coal. The prepared sizes are sometimes "by-products" in the preparation of sizes in greater demand in the industrial and domestic markets and, therefore, can frequently be secured at reduced costs. Modified run of mine, consisting of run of mine coal with certain intermediate sizes removed; stoker coal, consisting of prepared sizes for use on stoker-fired equipment; and egg coal, consisting of screened coal with lump and slack removed, are being used for railroad fuel. The purchase of especially-sized coal can be made at little or no increase in expense and frequently at appreciable savings in cost and greater efficiency.

Control of Orders—As the purchasing agent furnishes the supply, he should have some yardstick to measure the need under varying conditions. Some purchasing agents arrange for the following week's supply according to the tonnage used during the current week.

The report also included suggestions as to the proper preparation and careful inspection of coal.

[The committee consisted of E. J. Lamneck, (chairman), fuel pur. agt., P. R. R.; J. J. Bennett, pur. agt., Ill. Cen.; J. M. Johnston, fuel agt., M.K.T.; P. Hunter, asst. pur. agt., C., B. & O.]

Office Methods

Investigations have shown that no changes should be made in the present form of the simplified invoice. Therefore, the committee recommends:

(a) That the railroads print conspicuously on the face of the purchase order the following clause: "Important:—Furnish invoices in triplicate or quadruplicate on simplified invoice form."

(b) That vendors who will not furnish these forms, should

be provided with them by the railroads. That after January 1, 1932, the railroads should accept only invoices that are rendered on the simplified invoice form.

Trade Discounts—Action should be taken toward having all selling companies quote net discounts.

Exchange Lists—The experience in exchanging lists of surplus usable material among railroads has been limited. In practically every instance where an attempt was made to circulate such information the results were so discouraging that the matter was dropped. The committee recommends that lists of surplus usable material be exchanged at frequent intervals between railroads in the same region, the thought being that these lists will often contain items which a railroad can purchase with advantage both to the buying and the selling road and which would also eliminate the middleman's profit.

[The committee consisted of C. D. Baldwin (chairman), pur. agt., Bangor & Aroostook; V. Miles Burpee, pur. engr., Del. & Hud.; J. E. Candelas, supt. of stores, Ferrocarriles Nacionales de Mexico; H. M. Dewart, pur. agt., Cen. Ver.; A. V. B. Gilbert, pur. agt., Atl. & C. & St. L.; W. W. Griswold, pur. agt., W. & L. E.; T. M. McKeown, asst. gen. pur. agt., Can. Pac.; R. L. Tindal, pur. agt., N. Y., C. & St. L.; G. W. Bichlmeir (chairman ex-officio), gen. pur. agt., U. P.]

Discussion—J. O. Spratley, Indianapolis Union, advocated that roads using exchange lists with which to sell material to each other should show the F. O. B. point, while S. W. Saye, Georgia & Florida, added that the practise of scrap dealers in reclaiming useable material from railroad scrap and selling it to railroads at higher prices should not be condemned without considering the service rendered to roads not large enough to do reclamation work economically.

Stationery and Printing

The expenditures made for stationery and printing by Class I railroads have been reduced from \$28,418,710 in 1926 to \$25,567,000 in 1929, or 11 per cent in the four-year period.

Standardization of Paper—The committee recommends that the railroads adopt size 7½ in. by 9½ in. as the standard letterhead. Many printed forms can be reduced to this smaller size. A saving can also be effected in the use of carbon paper of the smaller size.

Standardization of Forms—Standard grades of paper substance No. 14 and No. 16 bonds, manillas, news, etc., and substance No. 8 manifold stocks will suffice for the large majority of forms used by all railroads. A "forms committee" should pass on all printed forms, both new and old, taking into consideration the grade of stock necessary, the size, color of ink used and quantity required.

Repairs to Typewriters—The committee investigated office equipment repairs on several railroads. One railroad has not found it economical to operate its own repair shop and is handling this work with outside companies. Another road has operated its own shop for the past two years for repairs to all its mechanical office equipment and reports a substantial saving.

Mechanical Pencils—One railroad is furnishing mechanical pencils to the employees free of charge. Another railroad is selling them to the employees. This road, in the past year, has decreased its consumption of No. 1, 2 and 3 wooden pencils from 2,850 gross to 1,125 gross. The consumption of leads, which are furnished free to employees, increased considerably. However, a substantial saving was accomplished.

The report included a standard list of stationery for railway use.

The committee consisted of J. T. Van Horn, (chairman), stationer, Mo. Pac.; C. C. Anderson, stationer, Nor. Pac.; W. W. Griswold, stationer, C. R. I. & P.; D. E. Viger, stationery storekeeper, Boston & Albany; W. R. F. Wheley, stationery storekeeper, P. R. R.; H. O. Wilson, stationery agent, Can. Pac., L. C. Thomson (chairman ex-officio), manager of stores, Can. Natl.]

Discussion—It was brought out that the Missouri Pacific estimated a net saving of nearly \$3,000 in pencil costs last year by the use of mechanical pencils, while W. S. Morehead, Illinois Central, reported the more extended use of baggage cars for shipping stationery where baggage cars were not being utilized to capacity with revenue loading.

Handling Materials

All automotive equipment for terminal material transfers should be acquired, operated and supervised by the stores department.

Careful co-ordination between tractor trains and lift trucks should eliminate long hauls by lift trucks. This can be done by loading skids on tractor trailers with lift trucks for transportation to distant points where unloading may be performed by lift trucks or lift attachments on tractors.

The use of motor trucks in terminals for delivering material is recommended. Maintenance of way materials may be concentrated in store yards and delivered as near as possible to points needed, as required. In like manner the delivery of coal, ice, stationery, and other materials can be made.

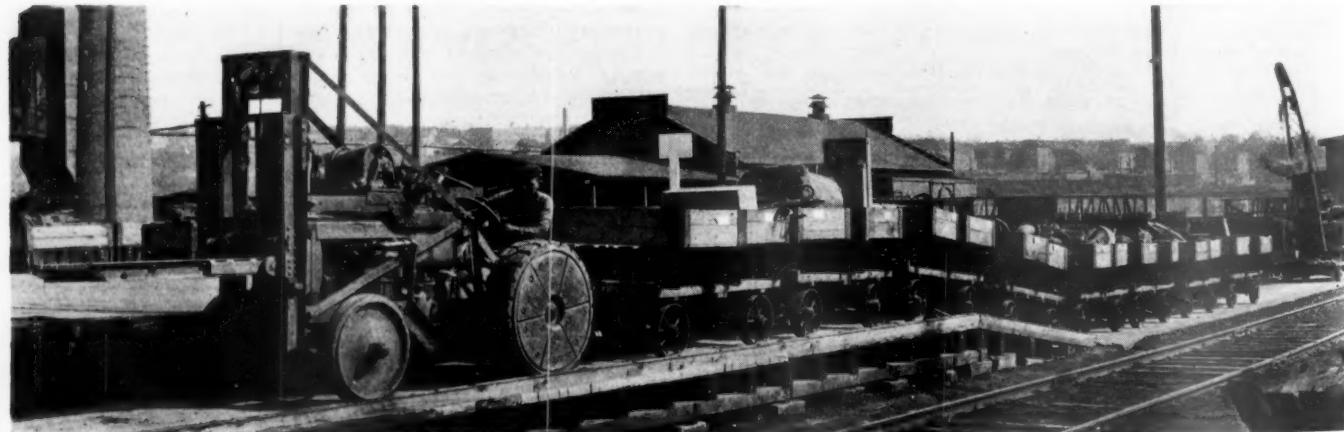
The committee recommends permanent storage on lift truck skids and in lift truck skid boxes only for material that will be used within a reasonable time, such as brass castings, journal bearings, boiler lagging, brake-beam parts, etc. Blacksmith coal, charcoal, and coke may be cheaply handled in securely-constructed skid boxes. In cases where such coal is received in box cars, the skid boxes may be placed in the car and the coal shoveled into the box and unloaded with lift trucks to a storage platform and held in stock until needed. The skid forms an economical facility for shipping coal to outlying points where it can be unloaded with lift trucks, and the coal shoveled as needed from the box until the container is empty, after which it can be filled with borings, or other suitable materials and shipped back to the point of origin. This will eliminate excess handling and waste of coal. Some roads have found that a box holding about 2,500 lb. of blacksmith coal is suitable.

Some roads have arranged with manufacturers located on their own lines, to have materials forwarded to railroad stores on lift skids. In some instances, these skids, when empty, are returned to the shippers with exchange scrap tonnage, empty shipping receptacles, etc.

The delivery of supplies to locomotives and cabooses is so vitally connected with stores operations that the supply men should be on the stores department pay-roll.

Where volume will justify, supply trains or supply cars should deliver to all points. Where sufficient volume is not obtained, a car may be detached from the supply train and operated over branches with a supply car attendant in charge. Where lesser distribution is made, a car may be forwarded by local freight over branches in care of the roadmaster or supervisor, and, when possible, a stores representative.

The committee recommends the assignment of baggage cars to be used for l.c.l. shipments from general stores to outlying points. These cars should move on specified dates on passenger trains. Back orders for less than carload lots may



A Raised Platform on the Milwaukee for Facilitating the Co-ordination of Lift Truck and Tractor-Trailer Operations in Handling Stores

be filled promptly after the material is available by the use of such assigned cars. The baggage car will carry shipments for all points in one direction, the shipments to be unloaded at passenger stations on baggage trucks, permitting delivery to all points promptly.

Contracts for the annual requirements of new rail furnished by the maintenance of way department and approved by the management, should be made by the purchasing department for delivery to coincide with the schedule for laying the rail, and the rail should move from the mills for distribution for laying in the track without rehandling. Fastenings, such as tie plates, rail anchors, angle bars, etc., should be arranged for by the supply department to suit the rail-laying program so that delivery of such items may be made from the general or division stores in quantities to meet current requirements only and should not be distributed too far in advance of the program for use.

Bridge lumber and piling should be distributed from treating plants or store yards on requisitions for each individual bridge and the material forwarded just in advance of the movement of the bridge gang to the point to perform the work. The distribution of cross and switch ties should be made by the supply department on a monthly schedule.

The mechanical department should arrange car, coach and locomotive programs and furnish to the purchase and stores departments schedules for performing such work so that the material can be ordered and delivery secured to fit the schedule which will insure the continuance of the work in shops without interruption and permit the control of investment in material and supplies.

[The report included a report of the A. R. E. A. on the storage and handling and protection of boiler materials.]

[The committee consisted of R. D. Crawford (chairman), gen. storekeeper, Mo. Pac.; B. T. Adams, asst. gen. storekeeper, Ill. Cen.; E. J. Becker, trav. storekeeper, So. Pac.; J. B. Fowler, storekeeper, P. R. R.; C. H. Dayton, div. storekeeper, Mich. Cen.; N. C. Galleher, asst. gen. storekeeper, M.-K.-T.; G. W. Leary, supervisor stores delivery, C. & O.; R. W. Lougee, storehouse for, gen. stores, Erie; J. V. Miller, asst. gen. storekeeper, C. M., St. P. & P.; O. A. Schultz, insp. of stores, C. B. & Q.; E. W. Walther, gen. storekeeper, B. & O.; J. W. Watkins, div. storekeeper, Lehigh Valley; J. E. Mahaney (chairman ex-officio), gen. supervisor of stores, C. & O.]

Discussion—G. A. Goener, Chicago, Burlington & Quincy, commanded the committee for recommending that all automotive equipment for material handling at shop terminals be placed in charge of the stores, adding that this arrangement was operating well on the Burlington and contending that the stores can show savings and can handle the work more efficiently.

Standardization and Simplification

The following question was asked 43 Class I roads: "Do your standard sizes of lag bolts, studs standard USS threads, hollow staybolts, copper ferrules and copper tubing comply with the sizes recommended May, 1927. Replies were received from 24 railroads. Some roads use fewer sizes than recommended by A. R. A. but some sizes carried do not conform to the standards recommended. Much can be done by the individual roads to control swelled-head and other special studs. One road reported that where one size of swelled-head stud required different threading, blanks were carried and threaded as required.

Lubricating and Illuminating Oils—The kind and use of lubricating and illuminating oils were studied. Some roads use many different kinds of lubricating oils while other roads operating under approximately the same conditions use fewer items.

Iron and Steel Bars—An investigation of the specifications for and use of iron and steel bars resulted in 19 replies. The information indicates that much can be done by the individual roads by studying their specifications with the view of eliminating those found to be unnecessary.

Pipe and Pipe Fittings—An investigation of the different practices on various roads in using pipe and pipe fittings showed that some roads carry only extra-heavy fittings, while others use both standard and extra-heavy with only a few duplicate sizes. There is no regularity as to the use of standard and extra-heavy pipe.

Brooms—Some roads use one broom for all purposes while other roads use four or five. The committee recommends two kinds—all-corn brooms for general use, and corn and rattan or corn and bamboo for heavy sweeping.

[The committee consisted of L. F. Duvall (chairman), asst. gen. storekeeper, A. C. L.; H. G. Devine, asst. pur. agt., St. Louis Southwestern; W. Dixon, supervisor of material standardization, Mo. Pac.; A. G. Follette, asst. chief material supervisor, P. R. R.; J. S. Gabriel, div. storekeeper, D. & R. G. W.; W. L. Hunker, dist. storekeeper, C. R. I. & P.; G. W. Leigh, pur. agt., M., St. P. & S. S. M.; W. E. Steen,

dist. storekeeper, B. & O.; A. D. Stewart, storekeeper, N. & W.; W. W. Williams, chief of req. bur., N. Y. C.; J. U. King, (chairman ex-officio) gen. storekeeper, A. C. L.]

Discussion—O. A. Donagan enlarged on the report with a statement of simplification activities on the Boston & Maine. A committee, consisting of one representative each from the stores and mechanical departments, was formed in November, 1929, and from that time until May, 1931, 11,169 items of material studied were reduced to 7,477 items or 33 per cent. A total of 646 patterns and 1,276 drawings were marked for elimination, of which 90 per cent have been eliminated to date.

Loading and Handling Cars

Capacity loading of cars will vary with conditions, and cannot be entirely separated from the prompt handling of the cars. One factor must sometimes be sacrificed for the other, this being governed largely by the kind of material involved. A constant study should be made to see that every means is used, by changes in existing methods or otherwise, to insure that every car is loaded to capacity, and is handled with all possible speed.

So far as practicable, containers and skids should be used. Their use may sometimes conflict with loading to the absolute capacity of the car, but they expedite loading and unloading, thereby reducing the number of delayed-car days.

When new track or storage arrangements are being planned, economical handling should be borne in mind.

Consideration should be given to showing the specific destination on waybills, so that cars may be spotted for unloading immediately on arrival at destination. Where cars are assigned for store-department use, consideration should be given to double decking for use in handling mounted wheels, etc.

Nearly all roads have some form of consolidated shipping schedule, but a study may show that changes could be made



Skid Shipment Being Removed from Car at Destination by Hand Lift Truck



A Skid Load of 60 Tank Springs, Weighing 5,880 Lb., Moving from Spring Plant to Storage Yard on the Missouri Pacific

to advantage, both in capacity loading, and in so loading as to insure prompt handling.

Frequently, schedules of deliveries from manufacturers of heavy material can be so arranged as to allow it to be shipped direct to the point of consumption and this frequently saves back haul and duplicate handling.

Education of the personnel is vital. This involves proper supervision and interest on the part of storekeepers and their staffs, with a continuing study of changing conditions to see that the best results are obtained.

[The committee consisted of T. H. Ryan (chairman), asst. pur. agt., Wabash; J. H. Beggs, pur. agt., C. & E. I.; J. W. Cockrell, div. storekeeper, Ill. Cen.; W. W. Davis, pur. agt. and storekeeper, Panhandle & Santa Fe; J. A. King, div. storekeeper, C. & N. W.; J. C. McDonald, dist. storekeeper, C. M., St. P. & P.; W. R. H. Mau, asst. gen. purchasing agent, Mo. Pac.; D. H. Reed, trav. storekeeper, Southern; J. S. Sewall, div. storekeeper, Nor. Pac.; C. H. Thompson, dist. storekeeper, So. Pac.; H. E. Warren, man. pur. and stores, G., M. & N.; Grover Wonnell, storekeeper, P. R. R.; J. E. Mahaney (chairman ex-officio), gen. supervisor of stores, C. & O.]

Training Employees

When the apprentice course or training school is not in effect, periodic meetings should be considered by both the purchasing and stores organizations.

Periodic Meetings—Periodic meetings may be not only for supervising officers but for any employee in the purchases and stores departments, from executives to common laborers. Any topic of interest may be discussed at these meetings. The storekeepers on one railroad hold a meeting with their foremen and stockmen each Monday forenoon at 11 o'clock. The main object is to discuss stockkeeping problems and review circulars or other instructions received during the week.

Separate meetings are held weekly by some stores to cover accounting matters, and subjects pertaining to pricing of requisitions, invoices, payroll, etc., are discussed.

Efficiency Meetings—Some stores hold periodic efficiency meetings (usually monthly) in the evening; they are usually semi-social. The meetings may include only supervisory forces and clerks, but usually are open to all employees.

Training Schools—The students are selected for definite lines of study and a definite curriculum is followed. The various principles involved in the study are discussed, not with the purpose of developing new ideas, but to make clear the methods already in effect. Each session is a lesson where a definite branch or part of the general topic is taught.

Understudies—The school provides the means of training an understudy to handle a position in the absence of the regular clerk. This arrangement has been successfully carried out in both the stores and purchasing department on one railroad for several years. Another procedure is to refer files of correspondence to individuals in the same office who would be likely to benefit from the information shown therein. It has also been found beneficial for the chief clerk to read and sign all letters written by junior or inexperienced clerks, thus enabling him to instruct them where the procedure followed is not in accordance with the policies of the department.

[The committee consisted of E. G. Roberts (chairman), stores dept., C., R. I. & Pac.; A. Aiken, office man., pur. dept., P. R. R.; U. S. Cornelius, trav. storekeeper, Southern; G. A. Goerner, trav. storekeeper, C., B. & Q.; C. B. Hanover, chief clerk to pur. agt., C. M., St. P. & P.; J. L. Irish, gen. storekeeper, O.-W. R. & N.; W. J. Sidey, storekeeper, B., R. & P.; L. C. Thomson (chairman ex-officio), man. of stores, Can. Nat.]

Discussion—C. L. Nash, Fruit Growers Express, stated that a training course was started in that company in 1930, consisting of lectures on 23 subjects. The practise is to set a date each week for these lectures, which are uniform at all points and are given on the same day by the respective storekeepers. The general storekeeper reproduces the discussion for distribution. The Burlington has a training course, consisting of a definitely outlined curriculum, but a road man is preferred for the lecture work and tests are given the students after each class he conducts.

Hand-to-Mouth Buying

By A. L. Sorensen*

"Hand-to-mouth buying" implies that the materials are hurriedly ordered and purchased from dealers that can supply the demand in the quickest possible time without proper regard to cost or quality and often without adequate inspection and test. We do not believe that any railroad, especially during the past few years, can be accused of following such a policy.

Planning Required—True economy in the supply department must be measured not only by the amount of money

* Manager of Stores, Erie, Hornell, N. Y.

invested in materials and supplies, but by the service rendered to the using departments, and the procurement of materials in the proper quantities so as to secure the most economical price. A high rate of turnover, with all necessary materials on hand when and where required, purchased at the lowest price with regard to quality, and in quantities that will produce the lowest economical cost is the goal toward which all supply departments are working. This involves planning, in order that the market may be thoroughly canvassed for quality, price and delivery, and so that materials can be manufactured, inspected and tested, and received as of the date needed.

"Hand-to-mouth buying," does not permit spending the time necessary to do these things, and is, therefore, the result of lack of system and scientific planning, and generally indicates unsound and uneconomical business methods. The large reductions that have been made in material balances during the past few years—in many cases from 50 to 75 per cent—are the result, not of "hand-to-mouth buying" but of pains-taking and scientific planning.

Railroads do not purchase materials for re-sale, except to the using departments, and it is, therefore, essential that the relation of the using departments to the supply department should be as closely co-ordinated as possible so that huge stocks will not be accumulated when usage is reduced and necessary material will be on hand when usage is increased. When co-ordination is lacking, inefficiency and disorganization results, profits are wasted and production costs are increased.

Essentials of Railway Buying—An essential of scientific purchasing is the building up of dependable sources of supplies and a reputation for fair dealing. Every opportunity should be given the manufacturer and his representative to demonstrate his proposition as through this channel many valuable suggestions have been made. Adequate specifications are necessary in the purchase of materials and should be drawn as nearly as possible to nationally-recognized standard specifications to make possible competition in purchases.

Material Pricing

Previous reports place the association on record as favoring the direct application of pricing at the store by storehouse forces.

The method to be followed in determining the proper price to be used has not been clearly discussed and approved. The committee recommends a centralized bureau. Whether one or more centralized bureaus are maintained depends on the size and the physical operating conditions of the property. Such bureaus would send out price bulletins from time to time as price changes are necessary. The local store-man, with his knowledge of stock movements, is in better position to know when to change the price, and the application of the price should, therefore, be made locally.

While every effort should be made to eliminate the duplication of work, care should be exercised to see that economy in pricing does not extend beyond the point where accuracy will be sacrificed.

[The committee consisted of W. S. Morehead (chairman), asst. gen. storekeeper, Ill. Cen.; W. A. Clem, asst. pur. agt., Reading; B. W. Griffith, gen. storekeeper, N. Y. C.; U. K. Hall, gen. supervisor of stores, U. P.; J. W. Hagerty, gen. supervisor pur. dept., P. R. R.; E. D. Toye, gen. storekeeper, Can. Nat.; E. F. Hasbrook (chairman ex-officio), pur. agt., C., B. & Q.]

Supplies for Dining Cars

A questionnaire was sent to 25 railroads to ascertain how many were using the A. R. A. standard sizes of table cloth and napkins. The replies are as follows:

Railroads using A. R. A. standards complete	6
Railroads using A. R. A. standard napkins 20" x 26"	4
Railroads using napkins 18" x 18"	2
Railroads will adopt A. R. A. table cloths next purchase	3
Railroads will adopt A. R. A. napkins next purchase	1
Railroads not using A. R. A. standards	9

There are 115 sizes and shapes of chinaware available on the market. The committee has concluded that 21 pieces are sufficient to maintain any service desired.

Several railroads are using club or platter service which has proven successful in speeding up the dining car service, besides reducing storage space, breakage and purchasing costs.

Cutlery for kitchens and commissaries should be standardized and the least number of styles should be used in order to reduce loss by carelessness or misuse. The committee has prepared a standard list for this service.

Quotations on future purchases should be secured on the following items not later than the months indicated, and

when placing contracts the price should be protected against declines:

First quarter—Maple syrup.

Second quarter—Asparagus, apples, apricots, beans (wax and refugee), beets, berries, cherries, corn, pumpkins, peaches, pears, peas, tomatoes and tomato products, pineapples, sauer kraut, spinach, preserved figs.

Third quarter—Prunes, Spanish olives, lobster, crabmeat.

Fourth quarter—Shrimps, ripe olives.

Where the volume of business handled by dining car service is sufficient, economy may be obtained by specifying cooking butter one or two points below the score of table butter and also where the volume is sufficient and where there are no unusual shipping or handling conditions, a further economy of one cent a pound may be secured through the elimination of the individual pound carton.

There are three groups of eggs carried in the markets—whites, browns and mixed. The committee does not believe that there is any benefit in purchasing eggs graded to one color and the practice of specifying eggs graded white or brown results in a penalty price being paid.

Two measures may be used in purchasing fresh fruits and vegetables. They are whole and less package lots. The majority of growers have been educated as to the requirements of the different markets and uniform size and proper quality can be purchased in whole package lots for much less cost than broken lots. A substantial saving can be made by purchasing articles in the original packages.

Tests should be made to determine the number of ounces of juice contained in the different species and sizes of oranges. When purchasing oranges for juice purposes, size 150 to 250 should be considered.

The report included specifications for several kinds of fresh and smoked meats and for poultry.

[The committee consisted of H. N. Mellor (chairman), commissary buyer, P. R. R.; A. J. Amory, asst. pur. agt., Can. Nat.; W. J. Burns, asst. pur. agt., Can. Pac.; H. A. Hansen, supt. dining car and hotel department, U. P.; L. V. Hyatt, commissary pur. officer, Mo. Pac.; L. M. Jones, supt. sleeping and dining cars, C. M., St. P. & P.; W. F. Jones, pur. agt., dining service, N. Y. C.; T. K. Russell, asst. supt. dining service, Ill. Cen.; J. L. Bennett, (chairman ex-officio), pur. agt., Cen. of Ga.]

Non-Ferrous Metals

Twelve representative railroads in the eastern and central districts reported practices followed in the purchase of non-ferrous metals. There are a large number of specifications for various non-ferrous metals and alloys in use, some of them varying only in comparatively slight degree. If uniform specifications were used for the same classes of materials, manufacturers could produce in larger quantities and maintain stocks sufficient to make immediate shipments as required, thus reducing production costs which would be reflected in the prices paid.

With but few exceptions, the railroads reporting are using

commercial standards for such items as copper and brass rods, sheets and tubes, permitting quick replenishment of stocks without the delay and expense incident to the special inspections required by individual specifications.

Where materials are bought to individual specifications, checks should be made from time to time to determine the difference in the cost of the material produced under such specifications and the same class of material made to commercial standards, or to standard specifications of the A. R. A.

Purchasing Methods—A large number of railroads are purchasing journal bearings, bearing metals, brass castings, etc., on an exchange basis, returning to the contractor or manufacturer all or a large portion of the scrap brass and copper products accumulated. Some railroads make contracts for wire and for copper and brass sheets, rods, tubes, etc., either on a sliding scale, or toll basis predicated on the base price of copper or at a flat price, based on market conditions. Where contracts or advance commitments can be made to advantage for a given period, office details incident to procurement are reduced and quick replenishment of stocks facilitated.

The constantly increasing use of non-ferrous metals in connection with electrification of steam railroads and for other purposes, makes it important that statistical information showing trends of prices, information as to production, consumption, and stocks on hand of merchantable non-ferrous metal be readily available.

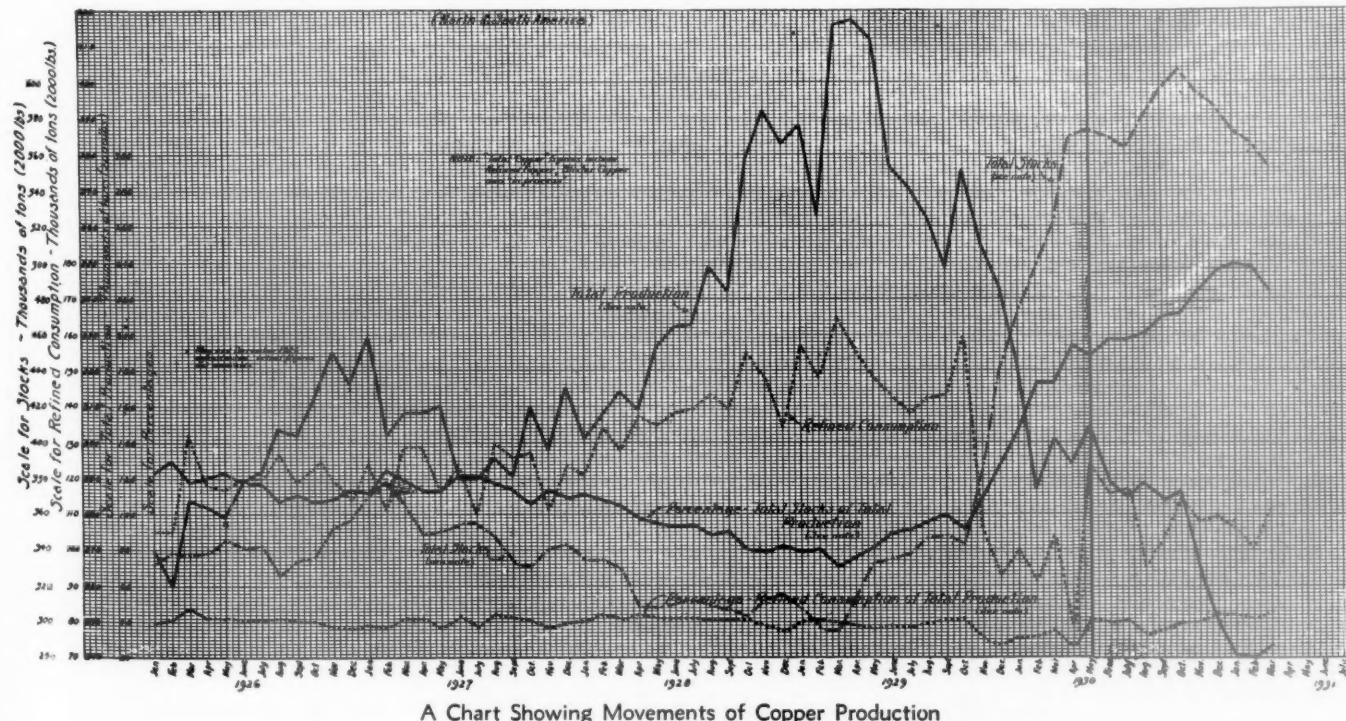
The chart shows a method which may be applied by railroads to keep a more complete record of the various statistics incident to the copper market.

[The committee consisted of P. L. Grammer (chairman), asst. pur. agt., P. R. R.; C. C. Hubbell, pur. agt., D. L. & W.; G. E. Scott (chairman-ex-officio), pur. agt., M.-K.-T.; J. H. Nicholas, gen. storekeeper, N. Y., C. & St. L.; E. T. Monroe, gen. pur. agt., B. R. & P.]

Weights and Measures

Material and supplies should be ordered according to specifications, which, so far as possible, should designate commercial standard size packages. The manufacturer or shipper, when preparing materials for shipment, should mark the package, containers or materials with the order number, in addition to the destination. Railroads that follow the practice of numbering their stores and arranging stocks in section classification should also have the manufacturer or shipper mark the package with this information.

The stock record should show average weights of castings, journal bearings, sheet steel and similar commodities, which should be used in verifying weights of materials received. When material is consigned to outside points for a large construction or work order job, a copy of the purchase order should be sent to the officer in charge and the maker of the requisitions.



When material is received by the stores department, the unloading foreman should render an unloading report or receiving sheet, according to sectional classification. This should be sent to the receiving clerk or stockman, who should make a detailed check of the material.

When material is inspected by an inspection bureau, a copy of the inspection report should be furnished the stockman.

Other materials ordered from general stock record description should be given a superficial inspection by the stockman who should indicate this when he signs the receiving sheet. When materials are checked by a separate stores department receiving bureau, the receiving sheets should be rendered in duplicate by the receiving checker, both copies being attached to the unloading report rendered by the unloading foreman, which should then be sent to the stockman. When the stockman has checked the material against the receiving sheets, he should sign the original and forward it to the accounting office for verification of purchase bills for payment and retain the duplicate for his record.

Verification of quantities and weights should be obtained by actual weight, measure or count. The unloading foreman should verify weights of all commodities received in standard packages, such as nails, rivets, etc. Other commodities not paid for by weight are verified by an actual check of one representative package or unit. In addition, the stock records should show the actual weight of the standard package as a further guide in checking the materials received.

When such commodities as cable, chain, or wire rope are received, they should be checked by weight and compared with the weights in the stock record. Any discrepancy should be immediately investigated for correction or adjustment.

Castings, malleable steel and grey iron, bar iron, sheet steel and shapes, should be weighed on scales when received. Gasoline, distillate and other oils in tank car lots should be weighed on track scales, oils received in 50-gal. containers should be first checked as to weight and one or two drums verified as to gallonage. Lumber in carload lots should be checked by track scale in addition to checking the detailed foot measure. Pipe and flues in carload shipments should be weighed on scales and a detailed unloading report determined by actual count and measurement.

Purchased material shipped direct by the manufacturer or dealers to the using departments should be carefully checked and verified as to quantities, weights and other required specifications, by a competent authorized representative of the department receiving the shipment. He should immediately report to the proper officer, carefully detailing each receipt and stating whether or not it checks correctly with their order.

It is recommended that a supervising officer, or other qualified employee, make periodical checks of materials received, aside from the checks made by the receiving checker or receiving clerk, to insure the railroad is receiving the proper brand and grade of material and the proper quantities.

[The committee consisted of O. Nelson (chairman), gen. storekeeper, U. P.; J. H. Brown, gen. storekeeper, Can. Nat.; T. A. Hodges, gen. storekeeper, S. A. L.; A. B. Lackey, div. storekeeper, Southern; E. W. Peterson, gen. storekeeper, Bangor & Aroostook; J. G. Stuart, gen. storekeeper, C. B. & Q.; James Young, asst. pur. agt., P. R. R.; A. L. Sorensen, (chairman ex-officio), man. stores, Erie.]

Terminal Railway Storekeeping

The report made in 1930 included the value of material stocks on 25 terminal railroads, the average monthly issue, and the number of days' supply represented. Nineteen of the companies replied to a questionnaire requesting similar information as of October 31, 1930. This statement shows a reduction of approximately 18 per cent in the total value of stocks on hand. Business conditions necessitated economies in the issue of materials, which resulted in an increase of 10 per cent in the number of days' supply on hand.

Traveling storekeepers and stores inspectors of trunk lines should co-operate with the storekeeper of the terminals in an inspection of stocks. No small part of the reduction that has been made in the value of stocks on hand is the result of the elimination of surplus and obsolete items.

Elimination of duplication in stocks of similar materials can only be accomplished through the rigid use of up-to-date stock books, regular checking periods, proper storage facilities and adequate supervision by the terminal stores officers and representatives of the proprietary lines.

Stores facilities and operations should be given equal consideration with those of the mechanical and operating departments in the designing of any new or the rearranging of any old terminal properties.

An exhibit submitted by the committee at the 1929 meeting

showed only 8 of the 25 terminal companies delivering materials to users, either in whole or in part, by stores department employees. Replies received this year do not indicate any considerable change in the last two years.

It is the consensus that where the physical layout will permit, motorized equipment should be utilized in the handling and delivery of material; that stores delivery to the mechanical department is particularly desirable, since it keeps high priced mechanics at work and away from the delivery counter, gives the stores representative first-hand information as to material requirements and permits of better distribution and supervision of issues.

[The committee consisted of C. W. Yeamans (chairman), pur. agt. C. & W. I.; J. C. Dods, gen. storekeeper, Kan. City Ter.; S. A. Hayden, chief clerk to gen. storekeeper, M.K.T.; A. F. Kreglow, storekeeper, Wash. Ter.; H. A. Lockhart, storekeeper, B. & O., Chi. Ter.; J. T. O'Dea, asst. to pres. and pur. agt., Peoria & Pekin Union; C. B. Sauls, div. storekeeper, Ill. Cen.; L. P. Krampf (chairman ex-officio), supply agt., Mo. Pac.]

Discussion—G. E. Scott, Missouri-Kansas-Texas, emphasized the importance of securing effective cooperation of railroad executives in improving terminal supply conditions and recommended that the division take definite action to obtain it, to which Chairman Walsh replied that it devolved upon the members to take individual action. H. H. Laughton, Southern, added that the reports were being called to attention of the boards of managers of terminals in which the Southern was interested, and that effective results were being obtained. J. G. Stuart, Chicago, Burlington & Quincy, stated that investigations made of terminals in which the road was interested had demonstrated the opportunity for improvement and explained that the experience of the supply officers of trunk lines was bound to be helpful to terminal officers.

Contest Winners Read Papers

For the fourth consecutive year the Purchases and Stores Division had presented to it at its annual convention the prize papers in a contest conducted among employees and junior officers of railway purchases and stores departments. The contest, which was conducted to stimulate the interest of the younger men in the supply work, was open to all employees below the rank of assistant general storekeeper or assistant purchasing agent. A committee consisting of L. P. Krampf, supply agent, Missouri Pacific, J. E. Mahaney, general supervisor of stores, Chesapeake & Ohio, and E. M. Hasbrook, purchasing agent, Chicago, Burlington & Quincy, judged the papers and awarded the honors equally to E. J. Denney, stock clerk on the Baltimore & Ohio at Ivorydale, Ohio, and to William Courage, trucker at the general stores of the Canadian National at Fort Rouge, Winnipeg. These papers, in which the authors discussed the need of more handling equipment and the problem of surplus material, will be printed in a later issue of the *Railway Age*.

More Discussion Urged

Other reports presented included those of the committees on fire prevention and safety and a progress report on Clayton act rules. Chairman E. A. Clifford of this committee, having been asked by H. H. Laughton regarding the application of the law to the transfer of materials from a parent road to its subsidiaries, explained that the Interstate Commerce Commission has ruled that such transfers do not require public advertising for bids under the purchasing rules of the act.

Before adjournment, C. D. Baldwin, Bangor & Aroostook, referred to the little discussion of the reports, and after expressing the conviction that the value of such meetings is seriously impaired by this, urged some action by the division to stimulate more discussion in the future. He was supported in the desire for a freer exchange of opinion and experience by H. H. Laughton, Southern, who had 40 representatives registered.

In addition to electing new officers, the association elected or re-elected to the general committee J. U. King, Atlantic Coast Line; A. L. Sorensen, Erie; C. B. Tobey, Lehigh Valley; C. E. Walsh, Pennsylvania; L. B. Wood, Southern Pacific Lines in Texas and Louisi-

ana, and H. P. McQuilkin, Baltimore & Ohio, following which the meeting adjourned.

R. S. M. A. Mobilizes To Rail Fight

The officers and members of the Executive Committee of the Railway Supply Manufacturers' Association held a meeting in Atlanta, Ga., on May 20, concurrently with the annual meeting of the Purchases and Stores Division of the American Railway Association, at which amendments to the constitution and by-laws were unanimously approved, enlarging activities from the holding of exhibitions of railway appliances to assisting the railways in combating unfair propaganda and assisting members of the association in their domestic and foreign problems.

Committees on public relations and on domestic and foreign trade relations were formed, although the personnel will not be appointed until the approval of the new plans by the entire membership.

The reports of the officers and chairmen of standing committees showed the association to be in a healthy condition, with a membership of more than 500 firms, according to the president, S. G. Down, who also announced the appointment of the following committees for the ensuing year: Finance, Chas. J. Nieman, Chairman; By-laws, V. W. Ellet, Chairman; Exhibit, N. C. Naylor, Chairman, C. W. Floyd Coffin, J. B. Himmelright, W. E. Wine, Geo. L. Gordon; Entertainment, J. E. Brown, Chairman, Harry Graham, Vice-chairman, and Geo. V. Denyven, Vice-chairman; Enrollment, H. L. Burrhus, Chairman, M. K. Tate, Vice-chairman, F. L. Johnson, Vice-chairman; Badge, F. H. Smith, Chairman, F. E. Dodson, Vice-chairman; Transportation, R. R. Porterfield, Chairman, F. C. Dinsmore, Vice-chairman, C. S. Clingman, Vice-chairman; Hotel, H. T. Armstrong, Chairman, with J. W. Fogg.

THE NATIONAL OF MEXICO, in accordance with its reorganization program, plans immediate reductions in the number of employees in the motive power department, which will effect a monthly saving in wages of \$137,000.

Burlington Holds Down Its Operating Expenses

(Continued from page 1021)

efficiency. There was improvement also in gross ton-miles per train-hour, and locomotive-miles declined at a more rapid rate than did train-miles. The number of cars per train, likewise, was satisfactorily maintained, although lighter loading caused a slight loss in gross and net tons per train.

Capital expenditures totaled \$7,169,718, or only slightly less than the average for the five-year period including 1930. Principal among such improvements were extensive betterments in the Chicago terminal area, yard improvements at Galesburg, Ill., additional fourth track between Downers Grove, Ill., and Elgin, enginehouse improvements at several points, bridge strengthening and new signaling equipment. Rolling stock acquisitions included twelve 4-6-4 type passenger locomotives, eight 4-8-4 freight locomotives, one gas-electric switching locomotive, five gas-electric rail cars, 500 automobile cars, 600 flat cars, 629 gondolas, ten baggage cars and 14 suburban coaches.

The Burlington continued to expand its operation of buses during the year to cover 1024 route miles of highway. The deficit of the bus operations was materially reduced with the prospect of their becoming profitable with a return of normal business conditions. On the other hand, the highway operations have made possible considerable economies in railway operating expenses.

In the first three months of the current year the Burlington's operating revenues totaled \$29,066,639, a decline of 14.6 per cent from the first quarter of 1930. Operating expenses were reduced almost in proportion—14.3 per cent—and the operating ratio was 67.4 as compared to 67.1 during the first quarter of 1930. Net operating revenues totaled \$9,480,416 and net railway operating income \$5,973,799, representing decreases of 15.2 per cent and 20.6 per cent respectively. It is plainly one of the elements of strength in the present unfavorable situation that the railways have been able to hold down their expenses to such a close relationship with the decline in revenues.

* * * *



In the General Storehouse of the Minneapolis, St. Paul & Sault Ste. Marie at Minneapolis, Minn.

Motor Transport Section

How the Greyhound Lines Advertise for Passengers

Newspaper campaign supplemented by comprehensive advertising program in national magazines emphasizing advantages of highway travel

THE Greyhound Lines, largest motor coach operating system in the world and numbering among their major stockholders the Pennsylvania and Southern Pacific railroads, is this year carrying on an impressive campaign of local and national advertising as a part of its program destined to increase the popularity of travel by motor coach in general and by Greyhound motor coaches in particular. Local advertising by motor coach lines is common, but the Greyhound Lines are the first to have utilized national advertising on an extensive scale.

Local advertising of the various Greyhound Lines is prepared and paid for by the lines individually. The cost of the national advertising, however, is divided among the various companies comprising the Greyhound System, including the Central-Greyhound, Pennsylvania-Greyhound, Pacific-Greyhound, Pickwick-Greyhound, Northland-Greyhound, Southland-Greyhound, Eastern-Greyhound, Capitol-Greyhound, Richmond-Greyhound, Southeastern-Greyhound and Provincial Transport lines. These contribute to the cost of the na-

tional advertising in proportion to the amount of circulation of the publications in which it appears in the territory served by each company. The national advertising, as well as local advertising for the lines operated by the Greyhound Management Company, is being prepared by Beaumont & Hohman, Cleveland, Ohio, advertising agency, under the direction of John B. Walker, sales and advertising manager of the Greyhound Management Company.

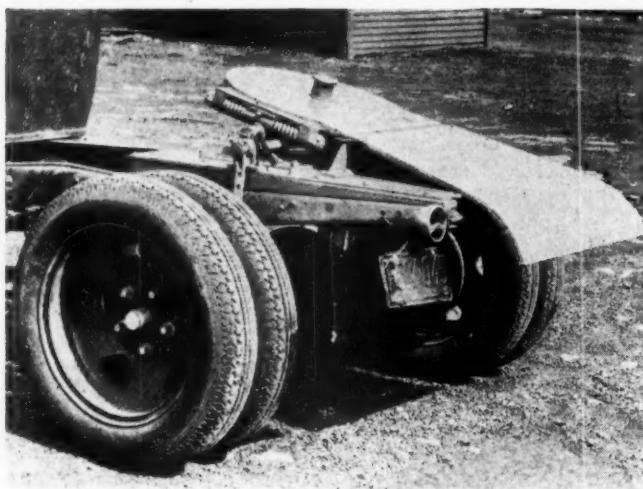
Schedule of National Advertising

The first advertisement in the 1931 schedule occupied two-thirds of a page in the January issue of a publication which has an especial appeal to college students. Its purpose was to interest students in the use of motor coaches in traveling to and from their homes during the Christmas holidays. This was followed in February by one-half page in a national weekly magazine, and another half page in the February issue of a monthly magazine devoted to recreation and travel.

The advertising program got fully under way in



Low Rates are Emphasized in Newspaper Advertising



Fruehauf 24-in. Full Automatic Coupler

Fruehauf Automatic Coupler

A 24-in., full-automatic coupler designed for use with trailers of from three to five tons capacity is being produced by the Fruehauf Trailer Company of Detroit, Mich. In design, this coupler is similar to the large Fruehauf coupler, but lighter material has been used in its construction, and the weight has been reduced to 475 lb. The 24-in. coupler also differs from the larger coupler in that it includes a long pick-up plate.

Plan Awards for Careful Driving

THE National Safety Council has just completed an analysis of motor vehicle fatalities covering the three year period from 1927 to 1930. During this time the number of private passenger cars involved in accident fatalities increased 37 per cent. In contrast, the number of buses, taxis, and trucks involved in fatalities decreased an average of 19.3 per cent. More specifically, trucks enjoyed a 14 per cent reduction, and buses a 19 per cent decrease.

On the theory that careful driving among the commercial fleet operators of the country should receive fitting recognition, the National Safety Council has inaugurated a system of medal awards for one-year, two-year, and longer periods of no-accident driving. The token is $1\frac{1}{8}$ in. wide by $1\frac{3}{8}$ in. deep. The first of these awards has already been made, and during the next few weeks hundreds of drivers throughout the country who have completed the period required will be given this official emblem.

Under the rules laid down by the council, the drivers of company members all over the country are eligible for the medal, providing their no-accident experience is properly certified by their employers. An accident is defined for this purpose as any mishap in which the driver's vehicle is involved, whether in motion, temporarily stopped, parked, or being loaded or unloaded, and which results in death, personal injury, or property damage, regardless of who was hurt, what property was damaged, or who was responsible.

Large and small companies all over the country have been making splendid records during the past year. Twenty-five drivers of the Western Electric Company, Chicago, traveled a total of 185,800 miles with only a broken window to mar an otherwise perfect record. Through an intensive campaign of safety education, the Greyhound bus lines established for their entire system, over a period of nine weeks, a mark in excess of 60,000 bus miles per accident. Twelve drivers of a fleet in Detroit have just completed the two-year no-accident period of driving.

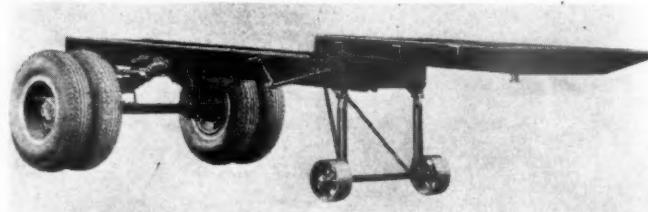
General Motors Brings Out First Trailers

THE General Motors Truck Company, Pontiac, Mich., has entered the trailer field with a complete line of standard models, including semi-trailers, four-wheel trailers, and six-wheel trailers.

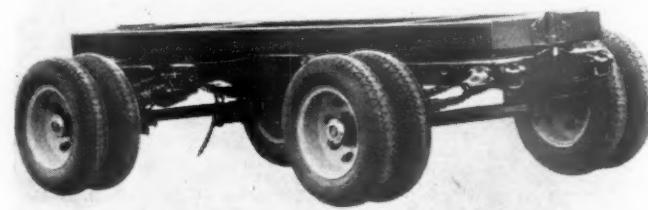
Of the four semi-trailers now being produced, one has from 3 to 5 tons capacity, another from 5 to 8 tons capacity, a third from $7\frac{1}{2}$ to 12 tons capacity, and one from 10 to 18 tons capacity. Martin-type fifth wheels are standard on the semi-trailers, making it possible for General Motors trailers to operate interchangeably with Fruehauf, Martin, and Highway semi-automatic types of semi-trailers and with Highway full automatic types.

The capacities of the three four-wheel trailers are 3 to 5 tons, 5 to 8 tons, and $7\frac{1}{2}$ to 13 tons. The standard four-wheel trailers are non-reversible but they are available also as reversible types. The six-wheel models, of the non-reversible type only, have a capacity range of from 11 to 13 tons. BK booster, Westinghouse and Warner Electric brake equipment is available.

One feature of the trailer line is the interchangeability of many parts between the trucks and trailers of General Motors Truck Company manufacture. Wheel bearings, hubs, wheels, springs, shackles, radius rods and brakes are among the parts which will be identical in trucks or tractors and trailers of similar capacity range.



The G.M.T. Semi-Automatic Semi-Trailer



One of the Four-Wheel Trailers

Meeting Competition with Equal Service and Rates

Northwest Freight Transport Company, subsidiary of Spokane, Portland & Seattle, successful in recovering traffic

By F. R. Forbes

Manager, Northwest Freight Transport Company

THE Northwest Freight Transport Company was incorporated in October, 1930, under the laws of Oregon. Its capital stock is owned by the Spokane, Portland & Seattle Railway Company. Its charter powers are sufficiently broad to permit its engaging in any form of transportation service, but to date it has used such authority only to install a complete store-door to store-door pick-up and delivery service between points on the rail lines of its parent company, under tariffs filed with the Public Utilities Commissioner of Oregon. Every necessary facility of the rail line is used, under contract, to make that service effective, including line haul service between stations. On April 1, 1931, this service had been in effect for approximately five months.

A brief description of the competitive conditions which led to the organization of this company and some of the results attending its operation may be of interest.

The Oregon Electric Railway, one of the component parts of the Spokane, Portland & Seattle railway system and an electric line operated according to steam railway practice, runs south from Portland through the Willamette Valley to Eugene, a distance of 123 miles. The lower Columbia river line of the S. P. & S. runs west to Astoria, 100 miles, and to Seaside, 118 miles. Communities served by these lines are all within the Portland trade territory, supplied in the main by Portland wholesalers and jobbers.

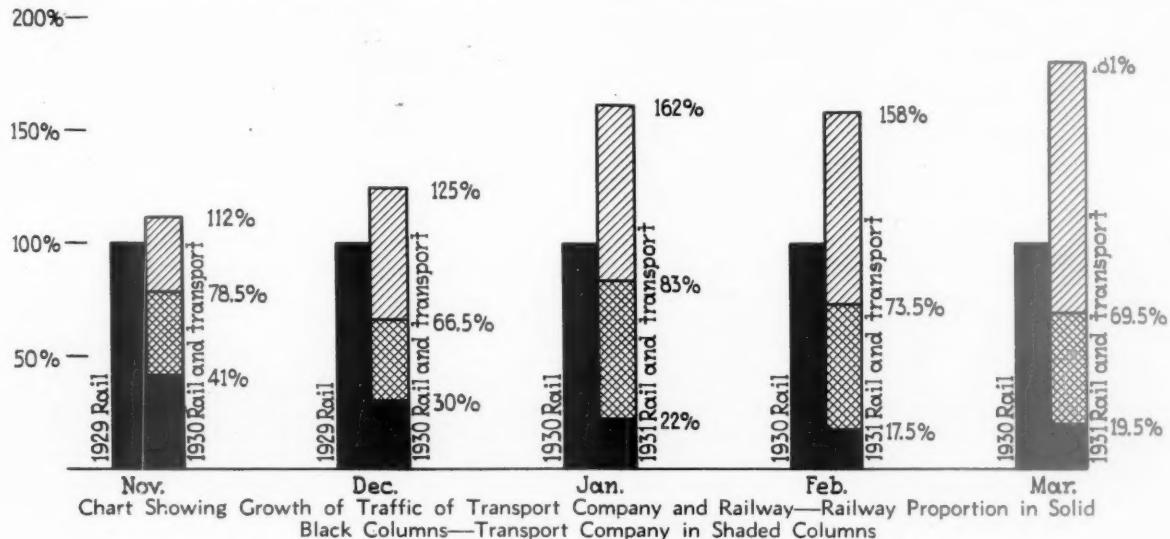
The Oregon Electric serves the following principal Oregon cities: Salem, the state capital, population 26,266; Albany, 5,325; Corvallis, 7,585; and Eugene, 18,901. The Willamette Valley is one of the notable diversified farming sections of the West, specializing in ber-

ries, fruits, seeds, hops and wool. The S. P. & S. Astoria line follows the Columbia river to the ocean at Seaside through sparsely settled communities from which lumber mills and fisheries still provide the major part of the rail tonnage, although of late years the bulk of this tonnage has moved to the east coast via the Panama Canal.

Traffic Has Declined Since 1923

This territory has for years been served adequately by the train service of the rail lines. Merchandise tonnage was comparatively heavy in volume and contributed a very satisfactory share of rail revenues, although steamer lines on the Willamette and Columbia rivers, unregulated by state laws, have always induced a depressed scale of rates. Since 1923 this tonnage has been steadily decreasing to the point where rail facilities vital to operation, and which could not be abandoned, were not being properly utilized. Common carrier obligations prevented curtailment of train service on these main lines. In 1930, with a depressed lumber market and an ever increasing intercoastal movement, rail lines in this territory found their long haul tonnage at its lowest ebb. Local business was declining to the vanishing point also, but because of other conditions and competition.

During the past ten years, the state of Oregon has made great strides in highway building and in highway improvement by hard surfacing. These highways, paralleling rail lines, are being utilized for commercial transportation by trucks of every description, licensed, without any restriction as to number, by the state. The state of Oregon licenses the so-called "standard" truck line operating between fixed termini and the "any-



where-for-hire" carrier which operates as its name implies. These two types of carrier, with the "contract" operator, also licensed, have been responsible for the steady decline in rail merchandise tonnage and revenue, and have gradually been encroaching on the local carload movement through reduced rates and minima, and because of the pick-up and delivery features of their service. With no restraint on their operation beyond the necessary filing of their rate schedules with the Public Service Commission (predecessor of the present Public Utilities Commissioner) and the payment of their license and insurance fees to the state, it was impossible for rail lines from day to day to determine the extent of their competition. To meet this situation on somewhat equal terms with the truck lines, to secure the return of this vanishing tonnage, and to serve their territory adequately with present-day transportation, the S. P. & S. system lines organized the Northwest Freight Transport Company.

In October, 1930, contract arrangements with rail lines and draymen having been effected, the transport company filed a tariff with the Public Service Commission of Oregon, naming rates between store-door at Portland and store-door at the other towns served. The tariff was later supplemented, at the request of the commission, by the filing of copies of the contracts with rail lines and with draymen. Common carrier status was conceded by the commission under the Oregon law, and this was confirmed by a ruling of the attorney-general of the state.

In fulfilling its common carrier obligations, the transport company contracts with rail lines and draymen to perform all services incident to the transportation of its business. The contract with the rail line covers receipt from draymen at the freighthouse, loading, billing, transportation in car to destination, unloading, delivery to draymen, and collection of an accounting for freight charges. A multi-copy, eight-part form of way-bill-expense-bill is used to facilitate early delivery. Contracts with draymen provide for complete pick-up and delivery service between store-door and freight house.

Contracts with rail lines and with draymen, on file with the Public Utilities Commissioner, are matters of public record. Under the terms of the rail contract, and out of its earnings, the transport company pays the rail line for the use of its station and yard facilities, pays drayage pick-up and delivery charges, pays claims and general overhead expense, retains a small percentage for emergencies, and remits the balance to the rail line for the line-haul transportation. Contracts with draymen are on a basis of being as near the going commercial scale as is possible.

Met Rates of Competitors

Standard truck line rates were met. This has produced a class rate scale averaging slightly higher than the rail scale between common points, but has compelled the publication of some commodity rates with lower minima and broader groupings than rail lines have published under carload ratings. The use of the Western Classification by all common carriers in the state is prescribed by the Public Utilities Commissioner.

Our operation to date has extended over a period which is seasonally, for this territory, the least productive in tonnage, and in a year with business conditions must below normal. In its entirety, railway traffic throughout the territory has showed a continuing decline in volume. The percentage of this total volume decline under the preceding year may readily and logically be applied to the merchandise movement which

would have been handled by rail lines during this period between any two stations in our operating area, if our service had not been in effect between those stations. In November and December, 1930, combined rail and transport company tonnage from Portland to common stations exceeded the rail tonnage handled in the corresponding months in 1929. In January, February, and March, 1931, transport company tonnage alone, from Portland to these common stations, exceeded rail tonnage in the first quarter of 1930.

Where highway truck competition compels a scale of rates, including pickup and delivery, that approximates the rail scale without such service, rail tonnage between common points will necessarily be diverted in time to the transport company operation, and transport tonnage must progressively increase to produce satisfactory revenue with the added costs. Rail merchandise tonnage from Portland to our common stations did decline sharply as transport company tonnage increased.

Steady Increase in Traffic

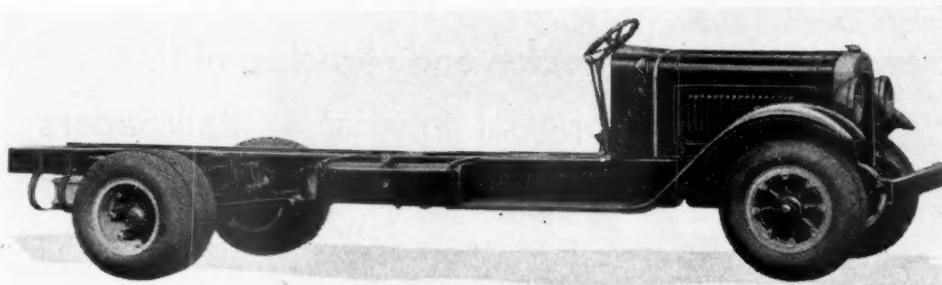
The chart shows for each month of our operation the percentage increase in transport company and combined transport company and rail tonnage over the rail tonnage of the corresponding month in the preceding year, and in the same month the resulting decrease in rail movement. In the figure for each month, the solid black column at the left at 100 per cent represents the rail tonnage handled from Portland to common stations in the same month in the year before the transport company operation started, while the solid black column at the right represents the percentage proportion of that tonnage actually handled in the current month by the rail line. The cross hatched portion super-imposed on the right-hand solid column represents transport company tonnage, with the black bar indicating the percentage point to which rail tonnage might have climbed in the current month without the existence of the transport company operation.

The figure for March, 1931, therefore, with actual March, 1930, rail tonnage shown at 100 per cent, indicates that while rail merchandise tonnage from Portland to all points common to the transport-rail operation in March, 1931, would have dropped to 69.5 per cent, or 30.5 per cent under March, 1930, such rail tonnage, due possibly to the competing service of the transport company, actually did drop to 19.5 per cent. But with the transport company's business added, total tonnage climbed to 181 per cent, or an 81 per cent increase over March, 1930. In that month, it is quite evident that, while some considerable portion of its tonnage was diverted from rail lines, more than two and one half times that amount was received from other sources or diverted from competitive agencies.

Results Gratifying

The movement of agricultural products over our route from the Willamette valley to Portland has been of fair volume and in tonnage units formerly handled over the highways, the rail movement being unaffected.

While our operation is a modest one covering a limited area and is as yet only in the experimental stage, concrete results to date have been fairly gratifying. We are attempting to use rail facilities to meet highway and river competition, and we know that to meet this competition we must provide equal service and rates. Our experience to date has in a measure confirmed the belief that, with rail rates and service on a parity with other competition, shippers and receivers, where no other considerations are involved, will patronize the rail carrier



Stewart High-Speed 3 1/2-Ton Truck Chassis

because of the known responsibility behind that operation, if for no other reason.

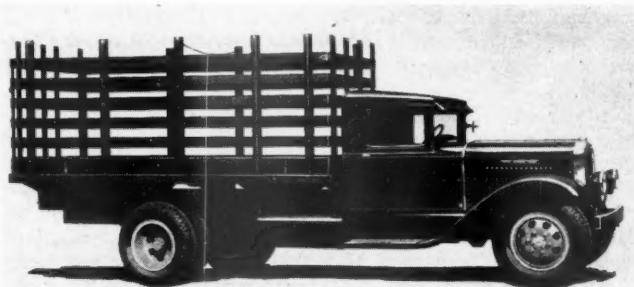
There is a definite satisfaction in supplying a service that present-day needs seem to demand.

Two New 4 to 5 1/2-Ton General Motors Trucks

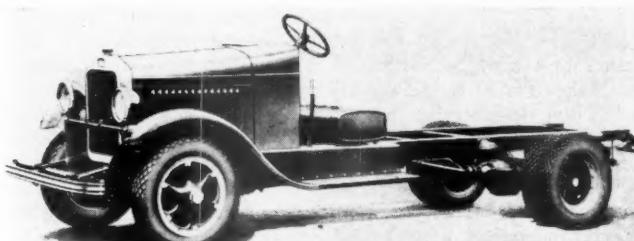
TWO new heavy-duty motor trucks in the 4 to 5 1/2-ton range, which are alike except in rear axle design, are being produced by the General Motors Truck Company, Pontiac, Mich. The rear axle of both models is full-floating, but that in Model T-51 is of the spiral bevel gear type, and that in Model T-55 is of the double reduction type.

Both trucks are powered with a six-cylinder, 94 hp. engine. The frames are 9 in. deep, the flanges are 3 1/2 in. wide, and there are 5 or 6 cross members, depending on the wheelbase length. The rear springs are 50 in. long with 11 leaves, and have auxiliary springs 35 in. long with 7 leaves. The front springs are 40 in. long with 12 leaves.

Both models have a four-speed transmission of the sliding gear type with all gears of nickel steel. The double-disc clutch is mounted in the flywheel housing on ball bearings and the driving discs are of heavy cast iron for dissipating heat. Four-wheel brakes and a roller-bearing, worm-type steering gear are provided.



The Model T-55 Truck with Rack Body



White Model 601 Chassis

Stewart Offers 8-Cylinder, 3 1/2-Ton Truck

THE Stewart Motor Corporation, Buffalo, N. Y., is now producing an eight-cylinder, 3 1/2-ton truck chassis, designed for high speed, long distance hauling. This truck is said to be able to make 50 to 60 miles an hour with a full load.

The eight-cylinder engine develops 130 hp., with a piston displacement of 420 cu. in. The transmission provides 12 speeds forward with three reverse, and an overdrive. This is composed of a standard four-speed transmission attached to the engine and a three-speed auxiliary transmission mounted amidship. The overdrive permits slower engine speed on long, fast runs. Four-wheel Bendix Duo Servo mechanically-operated brakes are provided, and these are supplemented by a B-K vacuum booster.

The standard wheelbase is 170 in. Special wheelbases of 196 in., 226 in. and 241 in. may be secured at extra cost. The chassis will accommodate body lengths of from 11 ft. to 18 ft. The chassis weight on the standard wheelbase is 7,600 lb.

White Company Adds Two New Trucks

THE White Company, Cleveland, Ohio, has begun production of two six-cylinder truck chassis designated as Models 601 and 602, Model 601 having a gross weight rating of 9,000 lb., and Model 602 a gross weight rating of 10,000 lb. The six-cylinder engines in these models have a piston displacement of 260 cu. in., and the N. A. C. C. horsepower rating is 29.5.

The clutch is of single plate design, operating in oil and completely enclosed, the steel driven plate of the clutch being slotted as a precaution against the possibility of warping.

The transmission is of the selective four-speed type, with heat-treated gears, the case being of cast iron and mounted as a unit with the engine.

The frame is a heat-treated, pressed-steel channel section type with a tubular cross member fitting between the front spring brackets. Other cross members used are of the channel section type with the addition of a special "Z" section cross member at the front, which provides a front engine and radiator support. The springs are of the semi-elliptic type and the rear springs are designed for the Hotchkiss drive. Lockheed hydraulic internal expanding service brakes are provided, these operating on all four wheels.

Looking Backward . . .

Fifty Years Ago

The important subject of car couplers which will protect switchmen will be considered by the coming convention of the master car builders, although there is a natural disinclination on the part of the association to officially endorse any particular device from fear of benefitting some inventor.—*Railway Age*, May 26, 1881.

The bold movement of Henry Villard to secure control of the Northern Pacific through his Oregon Railway & Navigation Company has finally proved successful. He has succeeded in purchasing a controlling interest in the stock of the Northern Pacific which was held by the president of that company and his associates. The directors of the Northern Pacific have voted to extend the Pacific division, now in operation from Tacoma southward as far as Kalama, 105 miles, on to Portland, only 60 miles further, where connection will be made with the main line by way of the Columbia river. Mr. Villard has also obtained control of the Oregon & California [now part of the Southern Pacific] which extends from Portland south 200 miles.—*Railway Age*, May 26, 1881.

Twenty-Five Years Ago

W. J. Backes, assistant engineer on the New York, Pennsylvania & New Jersey [now part of the Pennsylvania], has been appointed chief engineer of the Central New England [now part of the New York, New Haven & Hartford], with headquarters at Hartford, Conn.—*Railway and Engineering Review*, May 26, 1906.

Starting with the comparatively modest proposition to prohibit interstate railways from discriminating between travelers by giving free transportation to anybody except to bona fide employees exclusively in the service of the issuing company, and to religious and benevolent institutions, the Senate has begun to lower bars and open gates to one clamorous body of petitioners after another, until an enormous class of privileged persons has been constituted. Many senators tried to stop the flood of deadheading sanctions in the proposed pass bill. In the course of the debate on the pass question one senator stated that the exceptions in the bill will grant free passes to from 5,000,000 to 8,000,000 people in the United States.—*Railway Age*, May 25, 1906.

Ten Years Ago

In a statement issued on May 17 the United States Railroad Labor Board announced that wage reductions affecting all employees of roads having proceedings before that body would become effective on July 1. While the board gave no intimation of the extent of the wage decreases, it stated that prevailing conditions justify a readjustment downwards.—*Railway Age*, May 20, 1921.

Statistics prepared by the Bureau for the Safe Transportation of Explosives and Other Dangerous Articles show that the loss per ton among the commodities considered was the least for high explosives and gasoline and the greatest for "strike anywhere" matches and nitric acid. The loss per ton of a number of commodities was: Nitric acid, \$1.71; matches, \$0.51; gasoline, \$0.02, and high explosives, \$0.00—*Railway Age*, May 20, 1921.

The Chicago, Rock Island & Pacific has filed a protest with the State Public Utilities Commission of Illinois against the use of hard roads by motor bus companies, which is styled as an appropriation of public improvements to private interest without any compensation. The protest of the railroad is an objection to the operation of a motor bus line which the railway complains will force it to curtail its service.—*Railway Age*, May 20, 1921.

New Books . . .

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Articulated Locomotives, by Lionel Wiener. A history and description of various types of articulated locomotives. Illustrated. 628 p. Pub. by R. R. Smith, Inc., New York City. \$10

Economics of Air Transport, by C. E. R. Sherrington. "It is curious that as each new form of transport develops history repeats itself, in that technical design and mileage of service far outstrips the study of its economic aspect.... The work of Albert Fink, who may be termed the father of modern railway economics, only appeared fifty years after the opening of the world's first public railway, and the texts of his successors, A. T. Hadley, and W. M. Acworth, are still standard works. The study of road economics is only just beginning, and that of air economics can hardly be said to have commenced. Yet the social and political effect of the commercial air age upon the organization and life of the British Empire will be of supreme importance, and it is essential that the policies which must be decided upon during this decade the threshhold of air endeavor, be formed upon sound economic theory and practical experience, if the maximum advantage is to be gained from the efforts of technical research and aeronautical engineering progress." p. 3. Air Manual of the British Empire 1930, p. 3-9.

The Highway Code. "Issued by the Minister of Transport with the authority of Parliament in pursuance of Section 45 of the Road Traffic Act, 1930." Summarized in the article by Henry Riches listed among periodical articles in this Booklist. 21 p. Pub. by H. M. Stationery Office, London, England. One penny. Available in this country through British Library of Information, New York City. 9 cents including postage.

Report of the New England Railroad Committee to the Governors of the New England States. Recommendations for a policy with respect to consolidation and ownership for New England railroads. Includes large folding map, and statistical tables as appendices. 284 p. Pub. by New England Railroad Committee, Boston, Mass. Apply.

Periodical Articles

The Effect of Signalling on Track Capacity, by C. R. Byrom. Historical development of signalling discussed in connection with modern applications. Journal of the Institute of Transport, May 1931, p. 326-347.

Motors' Challenge to the Railroads, by Aldine R. Bird. Current conditions summarized. Current History, May 1931, p. 238-241.

Railway and Road Mentality, by George Mills. An interesting consideration of public attitudes toward transportation with especial reference to the generation that is growing up without railway enthusiasms and the practice of inaugurating road-construction programs to relieve unemployment. The practical dangers of indifference are also discussed. Journal of the Institute of Transport, May 1931, p. 355-360.

The Road Traffic Act, 1930, by Henry Riches. Provisions of the British law and outline of the Highway Code mentioned under "Books" in this Booklist. Journal of the Institute of Transport, May 1931, p. 348-354.

A Ten Year Plan for America—Blueprint for a Peace Industries Board, by Stuart Chase. "Is it too soon to go a step farther and actually formulate a plan for national planning? This I have tried to do. . . My program may be fissured with ill-digested suggestions but, even so, it provides a specific target for better men to shoot at. . ." p. 1. With the War Industries Board as historical precedent Mr. Chase suggests specific elements for organization and functioning of a master planning board for the economics of peace. What he suggests for transportation may be of interest. Harper's Magazine, June 1931, p. 1-10.



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developing the
SUPER-POWER LOCOMOTIVE**

- THE EARNING POWER and economy of modern Super-Power have been thoroughly proved.
- Back of this achievement lies seven years of engineering development by Lima Locomotive Works, Incorporated.
- Lima A-1 was the first locomotive to incorporate and coordinate the elements now recognized as essential to the modern Super-Power Locomotive.
- It was the forerunner of some 700 Super-Power Locomotives in use throughout the country.
- Certain elements of design and construction are essential to produce the operating results which have been attained by Lima Super-Power Locomotives.
- *Are you putting these elements into your new designs and specifications?*

LIMA LOCOMOTIVE WORKS

INCORPORATED

LIMA



OHIO

Odds and Ends . . .

Dahlia Champion

There seems to be no line of activity that is not pursued as an avocation by railway men. The latest instance of this to come to our notice is the case of B. R. Chichester, clerk at the Blissville freight office of the Long Island. He recently carried off the sweepstakes prize for dahlias at a Long Island Garden Club flower show.

A Watch in a Carload of Potatoes

Finding a wrist watch lost in a carload of potatoes would appear to be something like hunting for a needle in a haystack, but Pennsylvania employees at the Pittsburgh Produce Terminal recently located one that was dropped when the car was loaded at Delmar, Del., and returned it to the shipper. Upon arrival at Pittsburgh a careful search failed to reveal the watch during the unloading process until someone thought of lifting a number of floor racks in the car.

Service for the Pipe Smoker

The Canadian National appears to be the only railway on the North American continent that caters to the pipe smoker. Several years ago that road adopted the practice of placing pipe cleaners in all club and parlor cars, and the fuzzy sticks are now to be found in the smoking rooms on all passenger cars. They were formerly placed beside the match container attached to the wall, but are now even more accessible by being placed in the match holders which are on top of the movable ash receptacles.

Arthur A. Allen

It isn't often that the death of a former president of a Class I railway, no matter how long removed from active service, goes unnoticed in the daily press. But Arthur A. Allen, president and general manager of the Missouri-Kansas-Texas from 1909 to 1912 and since 14 years of age a railway employee and operating officer died several months ago at Chicago without a line finding its way into the news columns of the papers in that city. Mr. Allen was a close friend of Theodore Roosevelt and had spent many weeks on hunting trips with the former president.

Simplified Statistics of Railway Employment

"About 48 railway employees, a guard, an engineer, a fireman, or 51 employees *** were required to carry 22 people who could have been expeditiously carried to their destination in a motor truck *** controlled by one man."—From Highway Spokesman, issued by the National Automobile Chamber of Commerce, quoting the Australian Motorist under the caption "Inefficiency of Rail Operations Shown."

And in the same column of the Highway Spokesman, under the caption "Rail-Motor Employment":

A train of 50 freight cars gives jobs to only five or six men, while the same freight handled by truck would provide employment to two or three hundred workers ***.

Snow-White Ferry Boats No More

The snow white paint which has for years characterized the ferry boats of the New York & Hoboken Ferry Company, the New York Harbor facility of the Delaware, Lackawanna & Western, has finally given way before the onslaughts of bituminous coal smoke. Officers of the company found it almost impossible to keep the boats spick and span, even with repeated washings and paintings, and decided that the easiest way out of the difficulty was by changing the color. The "Chatham" was the first boat to have its white coat changed for a quaker-grey, with moss-green trim, which will stay presentable for a longer time and is said to have increased visibility in fog. The other 19 ferry boats which operate on the four routes across the

Hudson between Hoboken, N. J., and New York will be subjected to the same treatment when they undergo their annual drydocking.

Poetry Is His Hobby

The Nashville, Chattanooga & St. Louis claims a prize-winning poet among its employees at Atlanta, Ga. Clarence L. Haynie, clerk in the local freight office there, has been awarded first prize in a contest sponsored by the American Poetry Circle, a national organization devoted to poetical interests. His prize-winning work, a sonnet, was entitled, "When Does a Poet Die?"

Long Trains of 80 Years Ago

Long trains, made up of 150 to 250 cars, were operated in New England 80 years ago, the Boston & Maine Employees Magazine has discovered. A "History of Medford (Mass.)," written in 1855, describes a train drawn by a single locomotive that passed the "Milk Row" station at Somerville, Mass., on the Boston & Maine with 163 baggage cars. Baggage cars in service between 1835 and 1855 had a capacity of about 7 tons. "History of Concord, N. H." contains this reference to long trains in 1851: "The freight train drawn over the Northern Railroad (now part of the Boston & Maine) last week consisted of 194, and on Tuesday, October 7, of 242 loaded cars."

From Railroading to Writing Books

INDIANAPOLIS, IND.

TO THE EDITOR:

"Adventure Under Sapphire Skies" by Charles J. Finger is a book which will interest many railroad men. They may regret that most of the travel described therein was by automobile instead of by rail, but they will enjoy the book not only for itself, but because of a fraternal interest in the author who has worked in every department of railroading from boilermaker's helper to general manager, including a term as receiver of the Ohio River & Columbus, which discontinued operation during the World War. This is Mr. Finger's seventeenth book since 1919 when he settled in the Ozarks near Fayetteville, Ark., and began a literary career. In 1924, the American Library Association awarded the Newberry medal to his "Tales from Silver Lands" as the best book for children published in the United States in that year, and in 1929, his "Courageous Companions" won a publisher's prize of \$2,000 as a book on adventure.

LAWRENCE N. HELM,
Commercial Agent, Norfolk & Western.

Railway Nomenclature

The abandonment by the railways of the title "platelayer" for the staff charged with the day-to-day operations of track maintenance is a reminder of the gradual disappearance of many railway terms which have descended to us from the earliest railway days. In early railway history, plate layers were the men whose duty was to lay down the cast-iron plates of which the original railway tracks were composed. The introduction of the rail instead of the plate soon rendered the title meaningless, but it still remained the standard designation—not, singularly enough, of the gangs charged with tracklaying, but of those engaged in maintenance—until the substitution of the more prosaic names of "gangers" and "undermen." Other titles, of stage-coach origin, still die hard. The "engine-driver" and the "guard," for example, must sound strange in the ears of Americans, in whose country the lordly "engineer" and "conductor" hold undisputed sway. In France the functionary in charge on the footplate is known as "mecanicien," in Italy the "mecanista," and these titles are the more apt in that the first stage of his training lies in the fitting-shop.—Railway Gazette (London).



ROADS are now reaping the benefits of MODERN POWER

- RAILROADS with the foresight to keep their motive power up-to-date are now reaping the benefit.
- With less traffic to haul, they are able to use modern equipment for a majority of the work, thus reducing operating costs on the reduced volume of business.
- To retain this efficiency when business picks up means putting into service locomotives that are equally efficient with those now in use.
- You won't find such power in the storage yard. It must be built. Now is the time to get ready to handle increasing traffic without loss of efficiency by buying modern, economical locomotives. Money is plentiful and cheap now. Your fiscal agents would rather handle equipment trusts now than many other standard forms of obligations.



THE FRANKLIN SLEEVE JOINT

Close coupling reduces overhang and wear and overcomes the tendency for connection to unscrew

FRANKLIN RAILWAY SUPPLY CO., INC.

NEW YORK

CHICAGO

SAN FRANCISCO

ST. LOUIS

MONTREAL

NEWS

Frisco To Discontinue Two-Cent a Mile Fares

Action follows continuing drop in revenues during three-month trial period

The St. Louis-San Francisco has informed the various railroad commissions of the states through which it passes that on July 1 it will withdraw the two-cent passenger rates established on February 1 because its passenger revenues have continued to decline during the experimental period. J. R. Koontz, vice-president, in a report to the Alabama Public Service Commission said: "We have had two-cent passenger fares in effect for a period of three months. At the time of promulgation we advised you it was experimental. Possibilities are that the period of depression is not conducive of a true test, but our experiment has not served to increase travel and has resulted in substantial monthly losses in our passenger revenue. Effective July 1 we will withdraw the rate and go back to the original basis of 3.6 cents a mile. Your acquiescence and acknowledgment will be appreciated."

While the Frisco's cancellation is the most outstanding development related to reduced passenger rates, several railroads are experimenting with reduced Pullman fares in conjunction with lower rail fares. Roads in the Central Passenger Association territory are planning to operate a number of week-end excursions with reduced Pullman and rail fares, and to check the results to determine whether enough traffic can be created to justify a repetition of the excursions.

Railroads operating between Chicago and points in California which established three classes of fares for the period from January 1 to June 30, have filed individual notices continuing the three classes of fares to October 31. At the same time, the coach rate of \$50 has been reduced to \$40. On May 15 summer excursion rates were also placed in effect.

The Chicago, Milwaukee, St. Paul & Pacific, which established a two-cent rate on various parts of its system for a three months' period beginning January 1, and the Chicago & North Western, which placed a similar rate in effect from February 1 to April 30, have decided to continue the low rate a while longer. The Laramie, North Platte & Western has established a two-cent rate from Laramie, Wyo., to Welden and Coalmont, Colo., following the introduction of rail motor cars on this section.

Railroads entering St. Louis, Mo., will again operate a series of opera excursions during this season. Reservations for the opera will be made by the railroad upon application.

I.C.C. Order Sustained

The Supreme Court of the United States on May 18 sustained an order of the Interstate Commerce Commission requiring the Baltimore & Ohio, Pennsylvania and Reading to cancel provisions in their tariffs making allowances to certain Philadelphia warehouses which the commission held amounted to compensation for soliciting freight shipments.

Co-ordination in Maine Central Summer Services

Co-ordinated rail and highway services for the accommodation of vacationists on Mount Desert Island, Me., will be inaugurated by the Maine Central on May 29, when summer passenger service schedules between New York, Philadelphia and Washington and Maine points become effective. Features of the co-ordinating plan are the proposal to establish store-door collection and delivery of freight within the business district of Bar Harbor and the discontinuance of the steamboat service which formerly operated from the mainland to Mount Desert Island and for which the motor coach and motor truck services will now be entirely substituted.

The collection and delivery service in Bar Harbor, the announcement states, will become effective July 16 "subject to approval of tariffs by the public tribunals." The highway portion of the route to Bar Harbor will begin at Ellsworth and will be operated by the Samoset Company, Maine Central subsidiary. New Yellow motor coaches will be installed on the route while mail express, baggage and freight will be handled by motor truck.

In recent years both the highway route via Ellsworth and the water route via Mount Desert Ferry have been open to passengers and freight destined to points on Mount Desert Island. The development of highways in the region including the bridge to Mount Desert Island, and improved facilities at Ellsworth, have emphasized the convenience of Ellsworth as a transfer point. Accordingly the discontinuance of the steamboat service was decided upon following an increasing tendency of traffic to seek the highway route via Ellsworth. A mixed train will be operated to accommodate local traffic along the Ellsworth-Mount Desert Ferry line.

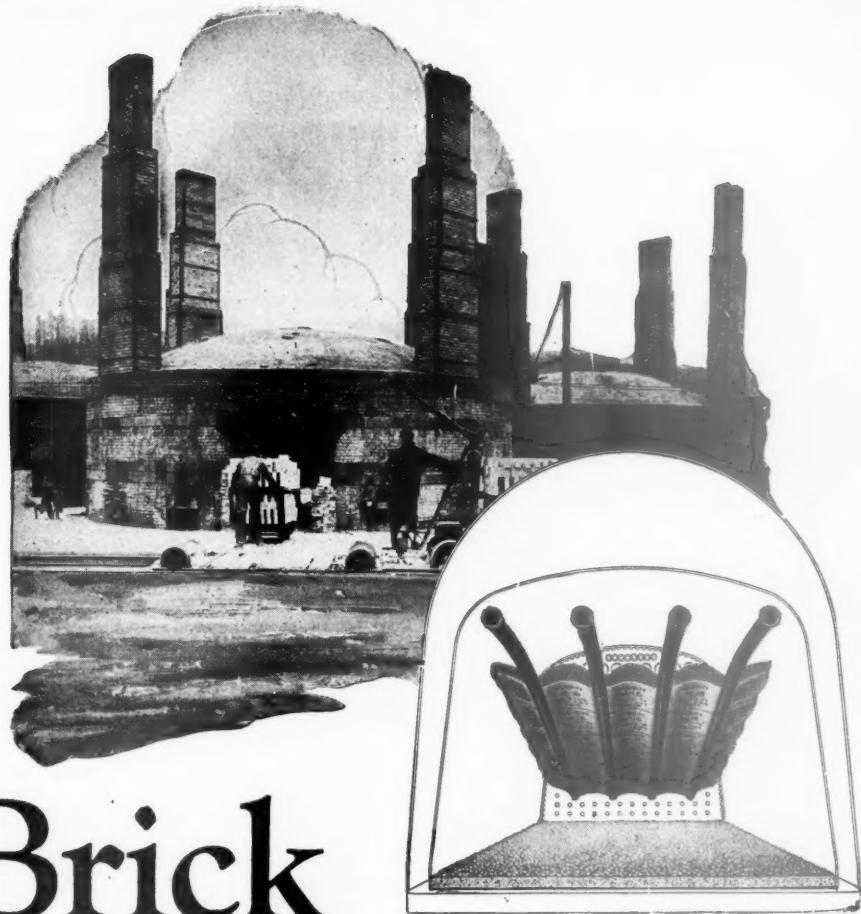
Los Angeles Union Station Order Affirmed

Supreme Court upholds order requiring three roads to build \$10,000,000 facility

After many years of litigation as to the authority of the California Railroad Commission or the Interstate Commerce Commission to require the railroads to construct a union passenger terminal at Los Angeles, which has twice before been before the Supreme Court of the United States, that court on May 18 rendered a decision affirming the judgment of the California supreme court which had affirmed the order of the California commission of July 8, 1927, requiring the construction of the station on the so-called Plaza site, with incidental connections, extensions and facilities, at a cost estimated at \$10,000,000, by the Atchison, Topeka & Santa Fe, the Los Angeles & Salt Lake and the Southern Pacific. The Supreme Court had once held that an earlier order of the state commission was beyond its power because the subject matter had been committed to the Interstate Commerce Commission. Proceedings were then instituted by the city of Los Angeles before the federal commission, which held that it was without authority to require the construction of the station but issued what the court refers to as "certain hypothetical certificates" holding that the construction was required by public convenience and necessity and that the expense involved would not impair the carriers' ability to perform their duties to the public. The state commission then made its order and petitions for a final order were submitted to the federal commission, which adhered to its conclusions but declined to issue an order. Mandamus proceedings were then instituted and the Supreme Court held that Congress had not conferred on the Interstate Commerce Commission authority to require the building of the station, but that it was necessary to obtain its approval. The railway companies then asked the state court to review the order of the railroad commission and when it affirmed the commission's action they appealed to the Supreme Court. The court said in part:

"The considerations which led the court to the conclusion that the power to compel the construction of such terminals had been withheld from the Federal Commission also make it clear that the authority which resided in the State had not been taken away except to the extent that the approval of the Federal Commission was required. The principle thus applicable has been frequently stated.

"It is that the Congress may circumscribe its



Arch Brick

development has been carefully guided

"That will require a special pattern of Arch Brick." This answer is an easy way out whenever locomotive Arches present a problem. But think what every special shape means in adding to the Storekeeper's worries.

American Arch Company have consistently kept patterns to a minimum. Shapes have been carefully standardized.

What is the practical result?

One railroad was using 146 distinct patterns and sizes of Arch Brick on its lines. Now,

thanks to the standardized Arch Brick of the American Arch Company, all it needs is 25 patterns to care for all the locomotives on the road.

Consider the resulting economy in inventory, in space, breakage and in time of handling.

Most Storekeepers are deeply appreciative of the constructive help constantly given them by American Arch Company.

THERE'S MORE TO SECURITY ARCHES THAN JUST BRICK

**HARBISON-WALKER
REFRACTORIES CO.**
Refractory Specialists



AMERICAN ARCH CO.
INCORPORATED
Locomotive Combustion
Specialists > > >

regulation and occupy a limited field, and that the intention to supersede the exercise by the state of its authority as to matters not covered by the Federal legislation is not to be implied unless the act of Congress fairly interpreted is in conflict with the law of the state.

"We find no such conflict in this case, as the approval of the Interstate Commerce Commission has been obtained, and its certificate of public convenience and necessity has been issued, in relation to the rearrangement, extensions and abandonment of tracks, and the use of the terminal facilities, involved in the proposed plan, and nothing further was required by the interstate commerce act.

"In the present case, careful inquiry has been made into all the relevant facts. There have been three hearings before the State Commission and two hearings before the Interstate Commerce Commission. The inadequacy of existing facilities has been shown and the relative merits of various plans have been the subject of elaborate study. The expense involved in the plan adopted, when considered in relation to the importance of the interests affected and to be served, does not appear to be so large as to warrant the condemnation of the plan as unreasonable and beyond the authority of the state."

P. R. R. Low Fares for Memorial Day Week-End

Reduced round-trip fares will be established by the Pennsylvania on its lines west of Pittsburgh, for the Memorial Day week-end, May 29-June 1. Tickets, good only in coaches, will be sold at rates, which, in most cases, will approximate 1-1/3 cents a mile.

Missouri Allows Railway Directors to Serve Three-Year Terms

Governor Henry S. Caulfield of Missouri has signed a bill amending the railroad corporation law of that state to permit directors of railroads to be elected for a three-year term instead of every year, as under the old law. The new measure becomes effective 90 days after the final adjournment of the legislature, which is now in recess.

Club Meeting

The Railway Club of Pittsburgh (Pa.) will hold its next meeting on Thursday evening, May 28, at the Fort Pitt Hotel. P. J. Freeman, chief engineer of the Bureau of Tests and Specifications of the Department of Public Works, Allegheny County, will present a paper on enforcement of specifications for bridge and road construction. Moving pictures will be shown.

Chicago-San Francisco Sleepers Via Denver

The Western Pacific beginning May 18 from Chicago and May 22 from San Francisco, Cal., established sleeping car service between those two cities, cars being moved in the "Aristocrat" of the Chicago, Burlington & Quincy between Chicago and Denver, and in the "Scenic Limited" of the Western Pacific between Denver and San Francisco.

Enginemen Demand Power Reverse Gear

Hearings on the complaint filed by the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen asking the Interstate Commerce Commission to require the railroads to equip their locomotives with power reverse gear as a safety appliance were begun before Special Examiner J. L. Rogers at Washington on May 11.

During the first week 27 enginemen who had been injured in using manually operated reverse gear were called to testify.

Reading Plans Store Door Delivery

The Reading Transportation Company, highway subsidiary of the Reading Company, has applied to the Public Service Commission of Pennsylvania for authority to provide freight transportation service, including collection and delivery, on four routes within that state. All these routes are in territory served by the railroad and by the bus operations of the highway company. They are as follows: Philadelphia - Pottsville; Pottsville - Lykens; Harrisburg - Allentown; Reading - Lancaster-Columbia. The hearing on the applications is scheduled for May 28.

Safety Section Meets at Chicago

Means of improving further the safety record of American railroads so as to reduce accidents to employees as well as grade crossing accidents and accidents involving passengers, were discussed at the eleventh annual meeting of the Safety Section of the American Railway Association at Chicago on May 19, 20 and 21. Approximately 300 representatives of the railroads of the United States, Canada and Mexico attended the meeting, over which Chairman H. A. Rowe, claims attorney of the Delaware, Lackawanna & Western, presided.

Railway Employment in March

Class I railroads in March had 1,319,469 employees, as of the middle of the month, an increase of 3,034 as compared with the number in February, according to the Interstate Commerce Commission's preliminary statement. This was a decrease of 14.69 per cent as compared with the number in March, 1930, and a decrease of 18.97 per cent as compared with March, 1929. Maintenance of way and structures employees showed a decrease of 23.46 per cent as compared with March, 1929, while the number of train service employees was 20.12 per cent less.

New York Delivery Plan Negotiations

Representatives of railroads serving New York City met on May 19 with spokesman of interested shipper organizations for a further discussion of pending proposals to provide store-door collection and delivery of carload freight in New York City. Opposition to the delivery plan submitted by the railroad had developed at a previous conference with these shipper interests. This plan contemplated the publication of a schedule of trucking charges by the Railway Express Agency which would make itself available as a trucking medium to serve patrons of all carriers.

The conference on May 19 was therefore held for the purpose of discussing principles which the protesting shipper interests considered a delivery system should embody. It is understood that among the principles advanced was one which would make the trucking charge an element in the railway freight rate, published with the tariff, instead of a

schedule of the Express Agency as originally proposed. Following the conference the operating and traffic vice-presidents of the railways agreed to submit the shipper proposals to railway presidents for consideration and decision.

Experimental Tobacco Rates Found Not Justified

The Interstate Commerce Commission has found not justified tariffs filed by the Atlantic Coast Line and the Norfolk Southern proposing an experimental reduction from 36 cents to 25 cents in the rate on leaf tobacco from points in North Carolina to Norfolk and Richmond, Va., in an effort to meet the competition of trucks and boats which have obtained a large part of the traffic to Norfolk. The commission found that the proposed rate would result in an undue and unwarranted disadvantage to Newport News, to which it was not proposed to apply the rate and that absolutely no truck competition to Richmond had been shown.

Freight Traffic in March

Freight traffic moved by the Class I railroads in March amounted to 29,960,291,000 net ton-miles, according to reports compiled by the Bureau of Railway Economics. Compared with March, 1930, this was a reduction of 15.1 per cent and it was a reduction of 25.5 per cent under March, 1929. The Eastern district reported a reduction of 14.1 per cent compared with the same month in 1930; the Southern district 16.1 per cent, and the Western 16.2 per cent.

For three months ending with March the total was 87,340,190,000 net ton-miles, a reduction of 17.9 per cent under that of the corresponding period in 1930, and a reduction of 25.7 per cent under that of the same period in 1929.

Railway Acquisitions Not Tacitly Approved by I. C. C.

Denial of a widely published newspaper statement that the Interstate Commerce Commission has tacitly or tentatively given its approval in advance to various acquisitions of stock interests in railways is made by Chairman Ezra Brainerd, Jr., in a letter to Senator Couzens, who had submitted a copy of the syndicated article to the commission with a request for information as to how it was done. Except for possible chance information on the part of some individual commissioner, Chairman Brainerd said, the commission has no knowledge of proposed acquisitions until after they have been brought to its attention through formal applications filed in accordance with its rules of practice, "nor does its majority tacitly or actively give its tentative approval to stock acquisitions which have not been brought officially to the commission in the form of applications." Incidentally, Chairman Brainerd took occasion to enlighten Senator Couzens on some of the elementary technicalities of the consolidation law, and as to the differences between acquisitions of a stock interest, stock control, system operation of two or more carriers, and complete consolidation into



To ECONOMIZE— MODERNIZE

The number of locomotives in service in Class I roads numbered 57537 in 1929, a reduction of one per cent below 1911, and a reduction of 12 per cent below the peak year of 1924.

However, in 1911 only 39 per cent of the locomotives on line were over 10 years old. In 1924 the number of locomotives over 10 years old had increased to 74 per cent, and in 1929 it had again increased to 80 per cent.

If progress in the art of locomotive designing had come to a standstill years ago, one might justify these figures. But knowing that the past ten years have contributed many major improvements in locomotive design, that even during the last five years still more advanced thought has been applied, and that at no time in history has there been the effort that is being made today to improve locomotive efficiency and capacity, one is forced to admit that for years the expenditures for modern locomotives have been entirely too small.

Dr. Julius Klein, in a recent address, made the statement: "Don't overlook the perils of obsolete equipment. It is wiser to have the junk heap outside the factory than in it."

American Locomotive Company
30 Church Street New York N. Y.



a single corporation. He also pointed out that many of the transactions which were described in the newspaper article as "that the railways are now making their own consolidations," are made by holding companies not within the commission's jurisdiction and that often such transactions do not amount to actual control; whereas the commission's jurisdiction is over acquisitions of control of one carrier to another. Since none of the acquisitions referred to "appears to involve control by one carrier of another and we have no advice that the Clayton act has been violated," Chairman Brainerd said, "we have had no occasion to act regarding any of them, and we have not acted, tacitly or otherwise." In reply to a further letter from the Senator, Chairman Brainerd said that a stock purchase does not amount to a "consolidation" and that there are many railroad systems composed of separate corporations not yet consolidated.

Await Decision on Montreal Elevation

Judgment was reserved last week at Ottawa by the Board of Railway Commissioners for Canada on the application of the Canadian National Railway to build an elevated track from Longue Point to Eastern Junction in connection with the \$50,000,000-Terminal plan for Montreal. It was opposed by the city on the ground the track should be depressed. A decision will be rendered by the board as early as possible to expedite construction.

The application, in one form or another, has been before the board since late in 1930. Permission to build an elevated track was given by the board some months ago but the Dominion Cabinet ordered a rehearing to permit additional evidence to be presented by the city.

Accident Prevention Contest Winners

Winners in the eight groups of the annual steam railway accident prevention contest conducted by the National Safety Council, in which Class I railroads in the United States competed, were awarded trophies at a dinner held at the Stevens Hotel, Chicago, on May 19. In presenting the awards Lew R. Palmer of the Equitable Assurance Society of New York commented upon the remarkable records made by the American railroads in reducing accidents. The eight winners are Group A, Chicago & North Western; Group B, Atlantic Coast Line; Group C, Oregon Short Line; Group D, Mobile & Ohio; Group E, Duluth, Missabe & Northern; Group F, Staten Island Rapid Transit Company; Group G, Missouri-Illinois.

Rate Increase Urged

An increase in freight rates in order to rehabilitate the purchasing power of the railroads and thus aid in the restoration of national prosperity was advocated by Nathan L. Amster, president of the Citizens National Railroad League, Inc., in a statement issued on May 18. This league, with headquarters at 25 Broad street, New York City, is described as a body "organized to promote

a national railroad system in the best interest of the shippers, the employees, the farmers, the investors, and the public."

In defending his proposal for increased freight rates, Mr. Amster holds that such a course is to be preferred to what he found to be the only other alternative available to the railroads—a reduction in wages.

J. W. Redmond Would Maintain Status Quo in New England

Judge J. W. Redmond, vice-president and general counsel of the Central of Vermont, testifying on May 14, before the committee on transportation of Massachusetts State Legislature, advocated that New England railroads be left as they are while legislation is sought to prohibit any trunk line directly or indirectly from obtaining control of any New England road.

If the New England railroads must be grouped, Judge Redmond would favor an all-New England system provided such could be elected without control from the outside. In presenting his testimony Judge Redmond emphasized the fact that he was expressing his personal opinion and not that of the Central Vermont or its parent company, the Canadian National.

Reduced Fares Suspended

The Interstate Commerce Commission has suspended from May 16 to December 16 tariffs filed by the Chicago Great Western and Minneapolis, St. Paul & Sault Ste. Marie, proposing to establish reduced round-trip excursion passenger fares between Chicago, Forest Park and Maywood, Ill., and Minneapolis, St. Paul and Rochester, Minn., which would be lower than the fares of other roads. The tariffs proposed a round-trip rate between Chicago and the Twin Cities of \$15 in place of the present rate of \$18 for tickets good in coaches only, and \$18 in place of the present rate of \$22 for tickets good in coaches or in parlor and sleeping cars on payment of parlor or sleeping car charges. Protests were made by the Chicago & North Western, the Chicago, Milwaukee, St. Paul & Pacific and the Chicago, Burlington & Quincy against the establishment of a differential fare by the longer route.

N. Y. Regional Plan Proposes New Rail Facilities for Brooklyn

In line with suggestions previously advanced for the scientific development of New York City and its surrounding territory, the Regional Plan Association, Inc., of New York has recently outlined proposals for the improvement of the Brooklyn section of the Metropolitan area. Those features of the plans which involve the construction of new rail facilities are as follows:

"One proposal is for a combined treatment of a marginal railway and highway to serve industrial areas along the waterfront. This plan, in the Columbia Heights section, would utilize two levels, the highway running above the railway, but both being well below the proposed

residential areas. * * * This corresponds to part of Belt Line No. 3 of the Port Authority plan, and was proposed by the Brooklyn Committee on City Plan in 1913. * * * The plan suggested takes the marginal waterfront railroad above Atlantic avenue, and south of that point proposes its construction on a viaduct about 100 ft. west of Columbia street, similar to the line to be constructed by the New York Central on the west side of Manhattan." The line would then run south on or parallel to Furman street, with space provided above it for a highway and building sites. Its maximum grade would be 1.6 per cent, while connection would be made with the tracks of the New York Dock Company.

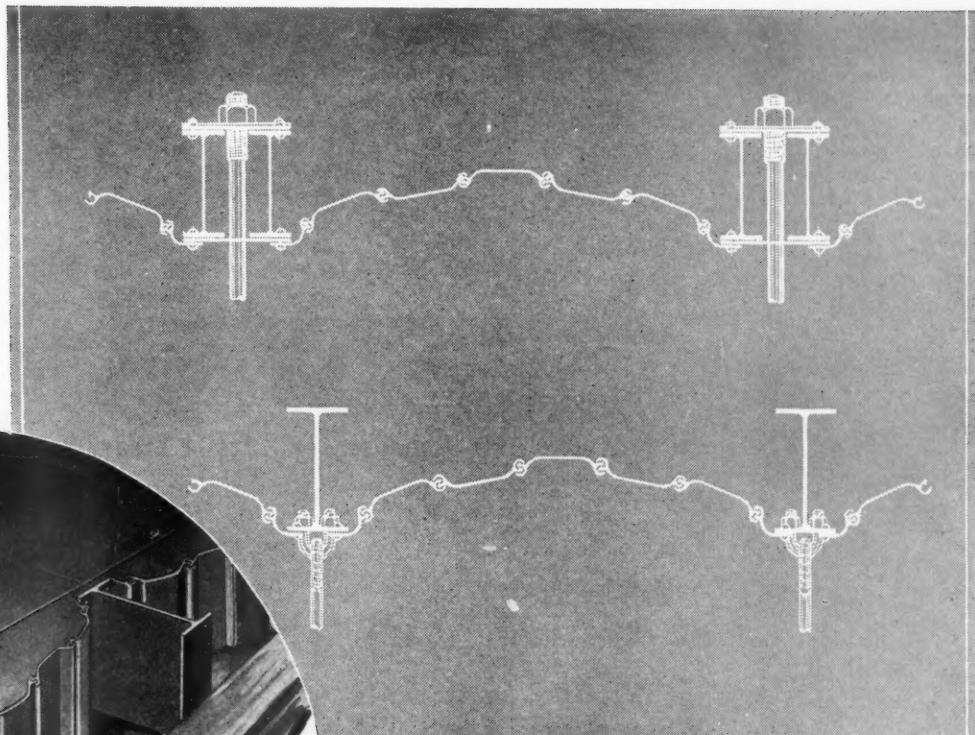
After discussing the proposed railroad connections to the Jamaica Bay region, which were described in the *Railway Age* of February 14, page 383, the outline goes on to state that "The Regional Plan would go much further. It includes not only the projected Bay Ridge-Greenville freight tunnel of the Port Authority's comprehensive plan, but an outer belt line along the north side of Jamaica Bay in the eastern part of Queens and thence under the East river to the Bronx. It is believed that such a belt line will ultimately be required in addition to the facilities already furnished between Long Island and the Bronx by the New York Connecting Railroad.

"Brooklyn also needs and is entitled to adequate trunk line passenger facilities. Brooklyn and Queens together represent a city of over 3,600,000 population, or considerably larger than Chicago, and yet it has no trunk line passenger station from which passengers may embark for any point beyond the limits of Long Island. * * * The Regional Plan would remedy this by providing in the vicinity of Grand Army Plaza a union passenger terminal as one of a series of such passenger terminals proposed throughout the region. Connected up by a system of passenger loops, such a terminal would be served by the New Jersey railroads via a connection through Staten Island and also across Manhattan, and with the railroads to the north and northeast via the existing route over Hell Gate bridge."

Dice Sees Need for Co-ordination in All Activity

That an orderly return of business to a sound basis will come only with a proper co-ordination of all economic and political activity was the view expressed by Agnew T. Dice, president of the Reading, in an address before the New Jersey Bankers Association at Atlantic City, N. J., May 15. Mr. Dice in his opening remarks deplored the resort to political expediency on the part of those in authority, criticized the tariff, and denounced policies which permit imports from Soviet Russia and unrestricted immigration.

"Our political medicine-men to the contrary notwithstanding," he said "no simple or easy remedy can be found for deep-seated troubles traceable in no small part to governmental extravagance and disregard of economic laws and fundamental truths. But the order



A *Steel* Wharf

for any depth of channel
and any surcharge load

APARTICULARLY efficient and economical type of wharf and bulkhead construction is illustrated here-with. By varying the weight of the C B Sections and the spacing of the master piles, a wharf of any desired bending strength or any depth of channel can be constructed. An anchor rod is used for each master pile. No waling is necessary, as the piling, driven in the form of an arc, is entirely in tension.

This type of construction, incorporating C B Sections and Carnegie Steel Sheet Piling . . Section M 107 . . was successfully used for wharf at Gravesend Bay, New York, and more recently at Panama City. A new job at Alpena, Michigan, now under construction, incorporates a double master pile as shown at top of illustration. Carnegie Engineers are at your service at all times.

CARNEGIE STEEL COMPANY • PITTSBURGH

Subsidiary of United States Steel Corporation

139



CARNEGIE
STEEL SHEET PILING

we are seeking to bring out of the chaos points to the road we must follow. Order suggests co-ordination and co-ordination sums up the many things which must be done to restore vigor and efficiency to our governments, industries and railroads. Our governmental agencies, national, state and local, must better co-ordinate their own activities and their relations with each other in order to promote economy and efficiency. Industry must better co-ordinate production and consumption. And waterways, highways and airways must be co-ordinate with the railways."

In discussing the railway situation, Mr. Dice called attention to the competition of motor vehicles, and compared the taxes paid by these highway carriers with those paid by railways, in order to establish the point that the competition is unfair. Taking New Jersey as an example, he said, "While New Jersey imposes the highest taxes upon the railroads it is very lenient to competitors of the rails. It ranks 43rd in the amount of taxes imposed on highway motor trucks used as common carriers. The average license fee for the 48 states for a 3-ton truck is \$268 while here it is but \$48.

In brief, including a low gasoline tax, this state received only 32 per cent of the average of the other states. Passenger buses, too, alone pay five per cent of their gross receipts to the various municipalities through which they operate. Small municipalities experience difficulty in collecting the taxes and no agency is provided to collect the tax as is the case with the railroads and public utilities. Interstate buses pay one-half cent per mile on mileage covered and a gasoline tax but this is collected through the Commissioner of Motor Vehicles."

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from the Monthly Reports of Revenues and Expenses for 171 Steam Railways, Including 16 Switching and Terminal Companies.

FOR THE MONTH OF MARCH, 1931 AND 1930

Item	United States		Eastern District		Southern District		Western District	
	1931	1930	1931	1930	1931	1930	1931	1930
Average number of miles operated	242,748.11	242,799.16	60,239.22	60,352.09	46,091.55	46,152.27	136,417.34	136,294.80
Revenues:								
Freight	\$291,288,741	\$345,397,345	\$125,831,045	\$149,485,539	\$56,532,717	\$66,655,152	\$108,924,979	\$129,256,654
Passenger	47,149,849	61,817,610	26,273,828	32,504,770	6,992,902	10,027,823	13,883,119	19,285,017
Mail	9,015,170	9,563,539	3,494,526	3,628,080	1,518,314	1,606,419	4,002,330	4,329,040
Express	8,360,465	11,110,651	3,538,974	5,180,403	1,576,094	1,786,898	3,245,397	4,143,350
All other transportation.	12,120,820	14,939,179	7,124,128	8,471,809	942,698	1,230,892	4,053,994	5,236,478
Incidental	7,552,426	9,363,458	3,971,705	4,819,106	1,274,991	1,599,630	2,305,730	2,944,722
Joint facility—Cr.	920,380	1,085,636	301,485	342,732	166,468	202,160	452,877	540,744
Joint facility—Dr.	259,452	323,631	73,192	79,715	25,542	32,787	160,718	211,129
Railway operating revenues	376,148,849	452,953,787	170,462,499	204,352,724	68,978,642	83,076,187	136,707,708	165,524,876
Expenses:								
Maintenance of way and structures	46,774,340	61,662,678	19,597,870	24,851,443	9,265,897	11,885,842	17,910,573	24,925,393
Maintenance of equipment	75,766,876	94,009,875	34,968,956	43,516,225	13,645,171	17,168,725	27,152,749	33,324,925
Traffic	9,947,816	10,893,627	3,809,212	4,281,060	1,887,514	1,987,088	4,251,090	4,625,479
Transportation	140,326,473	164,951,425	66,414,544	78,055,180	23,542,227	27,307,402	50,369,702	59,588,843
Miscellaneous operations	3,707,134	4,600,479	1,784,595	2,142,159	530,923	715,934	1,391,616	1,742,386
General	15,671,476	16,363,443	6,852,458	7,227,365	2,695,758	2,767,927	6,123,260	6,368,151
Transportation for investment—Cr.	612,154	1,013,011	102,871	214,236	49,055	96,267	460,228	702,508
Railway operating expenses	291,581,961	351,468,516	133,324,764	159,859,196	51,518,435	61,736,651	106,738,762	129,872,669
Net revenue from railway operations	84,566,888	101,485,271	37,137,735	44,493,528	17,460,207	21,339,536	29,968,946	35,652,207
Railway tax accruals	27,863,520	30,060,030	11,247,165	11,962,824	5,610,353	6,188,041	11,006,002	11,909,165
Uncollectible ry. revenues	73,641	92,073	37,423	42,753	12,267	10,244	23,951	39,076
Railway operating income	56,629,727	71,333,168	25,853,147	32,487,951	11,837,587	15,141,251	18,938,993	23,703,966
Equipment rents—Dr. balance	8,411,567	8,070,712	4,075,523	3,762,253	811,368	551,991	3,524,676	3,756,468
Joint facility rent—Dr. balance	2,312,407	2,073,638	1,229,934	1,020,732	193,342	225,470	889,131	827,436
Net railway operating income	45,905,753	61,188,818	20,547,690	27,704,966	10,832,877	14,363,790	14,525,186	19,120,062
Ratio of expenses to revenues (per cent)	77.52	77.59	78.21	78.23	74.69	74.31	78.08	78.46
FOR THREE MONTHS ENDED WITH MARCH, 1931 AND 1930								
Average number of miles operated	242,756.65	242,811.00	60,240.76	60,343.56	46,096.27	46,147.97	136,419.62	136,319.47
Revenues:								
Freight	\$825,823,974	\$1,010,804,709	\$357,264,030	\$440,184,968	\$161,035,816	\$197,665,094	\$307,524,128	\$372,954,647
Passenger	146,953,228	193,583,624	81,817,954	101,760,579	21,701,902	31,346,839	43,433,372	60,476,206
Mail	26,383,050	27,833,919	10,078,426	10,542,468	4,494,537	4,714,083	11,810,087	12,577,368
Express	19,902,177	27,361,963	7,910,560	12,424,941	3,717,303	4,442,970	8,274,314	10,494,052
All other transportation	35,118,615	43,167,066	20,335,497	24,755,904	2,754,601	3,500,334	12,028,517	14,910,828
Incidental	22,469,205	27,511,703	12,077,677	14,179,082	3,505,197	4,463,570	6,886,331	8,869,051
Joint facility—Cr.	2,809,376	3,230,423	919,954	1,015,637	478,980	567,307	1,410,442	1,647,479
Joint facility—Dr.	778,711	938,289	225,248	233,498	75,345	100,564	478,118	604,227
Railway operating revenues	1,078,680,914	1,332,555,118	490,178,850	604,630,081	197,612,991	246,599,633	390,889,073	481,325,404
Expenses:								
Maintenance of way and structures	131,940,878	169,852,704	56,974,768	71,203,525	27,304,681	34,696,623	47,661,429	63,952,556
Maintenance of equipment	224,916,599	279,212,661	104,372,255	129,542,126	40,540,338	50,721,273	80,004,006	98,949,262
Traffic	29,911,734	32,963,310	11,406,864	12,741,004	5,801,341	6,258,419	12,703,529	13,963,887
Transportation	414,209,510	496,184,612	196,334,554	233,970,183	69,155,496	81,308,090	148,719,460	180,906,339
Miscellaneous operations	11,220,848	13,952,964	5,422,209	6,583,270	1,582,701	2,077,288	4,215,938	5,292,406
General	47,198,988	49,447,258	20,627,764	21,788,507	8,155,162	8,291,337	18,416,062	19,367,414
Transportation for investment—Cr.	1,618,705	2,767,798	291,607	471,574	130,241	323,783	1,196,857	1,972,441
Railway operating expenses	857,779,852	1,038,845,711	394,846,807	475,357,041	152,409,478	183,029,247	310,523,567	380,459,423
Net revenue from railway operations	220,901,062	293,709,407	95,332,043	129,273,040	45,203,513	63,570,386	80,365,506	100,865,981
Railway tax accruals	82,027,351	88,166,570	32,268,137	34,562,122	16,444,283	18,147,333	33,314,931	35,457,115
Uncollectible ry. revenues	220,232	274,120	110,857	131,149	31,183	35,538	78,192	107,433
Railway operating income	138,653,479	205,268,717	62,953,049	94,579,769	28,728,047	45,387,515	46,972,383	65,301,433
Equipment rents—Dr. balance	24,378,567	22,731,433	12,463,167	11,760,663	1,803,497	543,747	10,111,903	10,427,023
Joint facility rent—Dr. balance	7,176,464	5,994,421	3,912,738	2,863,549	720,377	636,685	2,543,349	2,494,187
Net railway operating income	107,098,448	176,542,863	46,577,144	79,955,557	26,204,173	44,207,083	34,317,131	52,380,223
Ratio of expenses to revenues (per cent)	79.52	77.96	80.55	78.62	77.13	74.22	79.44	79.04

Compiled by Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

They Say "Tireless Coolie"

But even in the Orient now speeding up to the tempo of the Western World, the picturesque jinrikisha gives way, slowly but surely, to steel cars and Wrought Steel Wheels—modern transportation that is swift as well as tireless.



Illinois Steel Company

Subsidiary of United States Steel Corporation

General Offices: 208 South La Salle Street, Chicago

Equipment and Supplies

LOCOMOTIVES

THE CANADIAN PACIFIC has received 25 locomotive tenders from the Montreal Locomotive Works; of these 20 were ordered during 1930.

THE CENTRAL OF NEW JERSEY has ordered five locomotive tenders of 21,000 gal. capacity from the Lima Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of May 9.

THE LEHIGH & NEW ENGLAND has ordered one six-wheel switching locomotive from the Baldwin Locomotive Works. This locomotive will weigh 158,550 lb. on the driving wheels and have a total weight in working order of 249,000 lb. for the locomotive and tender. Its tractive force will be 37,750 lb.

FREIGHT CARS

THE WHEELING STEEL CORPORATION has given a contract for making repairs to 42 steel gondola cars, to the Koppel Industrial Car & Equipment Company.

THE AMTORG TRADING CORPORATION has ordered 25 air dump cars of 30 cu. yd. capacity from the Magor Car Corporation. This is in addition to 60 ordered from the same builder and reported in the *Railway Age* of April 18.

IRON & STEEL

THE PENNSYLVANIA has ordered 1000 tons of steel for a bridge at Crafton, Pa., from the McClintic-Marshall Company, and 400 tons of steel for a bridge at Pine Valley, N. Y., from the American Bridge Company.

SIGNALING

THE DEPARTMENT OF RAILWAYS AND CANALS OF CANADA has contracted with the Union Switch & Signal Company for the installation of electric interlocking at drawbridge No. 8, crossing the Welland Ship Canal near Thorold, Ont., where it crosses the Niagara, St. Catherine & Toronto Railway (Canadian National). Signals of the searchlight type will be used.

A FIVE-PAGE PAMPHLET listing ranches, camps, mountain hotels and summer resorts in several western states and in Canada has been issued by the passenger department of the New York Central, giving addresses, prices and other data with each listing. The purpose of the pamphlet is to make available in a single publication a large amount of data in the excursion field, for which one otherwise must search through the folders of a number of western roads.

Supply Trade

C. C. Neale, representative of the Toledo Scale Company, Toledo, Ohio, has been elected president of the National Scalemen's Association.

C. E. Naylor, manufacturers' agent, specializing in railway and refinery supplies, will move his office on June 1 from the Esperson building to 1400 Conti street, Houston, Tex.

A. J. Couse has been appointed district manager of the Chicago territory for the Edgewater Steel Company, Pittsburgh, Pa. Mr. Couse will have his headquarters as heretofore, in the Peoples Gas building, Chicago.

Filing Devices, Inc., Aurora, Ill., has been formed to succeed the Steel Transfer Case Company of that city and will manufacture steel filing cabinets and transfer cases. The incorporators are J. M. Unick, J. C. Unick and J. B. Lindstrom.

J. E. Gardiner, formerly general air brake inspector of the Boston & Maine and since July, 1930, with the Gustin-Bacon Manufacturing Company, at Philadelphia, Pa., has been appointed special representative of the Schaefer Equipment Company, with headquarters at Pittsburgh, Pa. Mr. Gardiner has been an active member of the Air Brake Association for many years and was for a time a member of its executive committee.

Following the merger of the International Derrick & Equipment Company and the Stacey Engineering Company to form the International Stacey Corporation, with general offices at Columbus, Ohio, Col. Carmi A. Thompson, former president of the Stacey Engineering Company, has been elected chairman of the board of the new company and Harry M. Runkle, former president of the International Derrick & Equipment Company, has been elected president and general manager of the new company.

The McKiernan-Terry Corporation, New York, has acquired the manufacturing business of the Lambert Hoisting Engine Company, Newark, N. J., including all designs, patents, machinery, patterns, fixtures, inventory and all essential materials for the continued production of the Lambert line. The company will hereafter be known as the Lambert Hoisting Engine Division of the McKiernan-Terry Corporation, and John A. Lambert will be in charge. The sales activities will be transferred to the general offices of the McKiernan-Terry Corporation in New York.

John M. Lessels, formerly manager of the mechanics division of the Westinghouse research laboratories, has been appointed manager of engineering at the South Philadelphia works of the Westinghouse Electric & Manufactur-

ing Company. Mr. Lessels was born at Dunfermline, Scotland, in 1888. He attended Heriot-Watt College, Edinburgh; the University of Edinburgh and the University of Glasgow, graduating from the latter institution in 1915 with the degree of bachelor of science in engineering, both mechanical and electrical. He was Lauder-Carnegie scholar at Glasgow in 1911. He later held positions as aero-engine inspector for the British war office, as assistant manager of the aero-engine department of Armstrong-Whitworth, Newcastle-on-Tyne, and as special engineer to works manager in charge of all sub-contractors for Rolls Royce. He entered the Westinghouse organization in February, 1920, and served six months in the office of the chief mechanical engineer. He then was appointed mechanical engineer in the railway department, which position he left in May, 1922, to enter the research department. He is an active member of several engineering societies and technical organizations in this country and abroad, and is secretary of the executive committee of the Applied Mechanics Division of the American Society of Mechanical Engineers.

R. F. Mehl, superintendent of the division of physical metallurgy of the Naval Research Laboratory has been appointed assistant director of research of the American Rolling Mill Company, Middletown, Ohio. He will take charge on September 1 of the physical science department of the Armco laboratories. He has been one of the research consultants for this company for the past eighteen months. Mr. Mehl received his B.S. degree at Franklin and Marshall College in 1919 and was engaged in university work at Princeton University, at Juniata College and at Harvard University until September, 1927, and since that time was superintendent of the physical metallurgy division of the Naval Research Laboratories at Washington, D. C. He is the author of numerous papers on subjects including preparation of pure alloys, aluminum-magnesium alloys, vacuum apparatus, refractories, compressibility of alloys, compressibility of tellurium, crystal structure and constitution of cadmium-mercury alloys, interatomic forces and cohesion in metals and alloys, crystal structure of the alpha copper-tin alloys and several papers on the Widmanstatten structures in alloys, and radiography by the use of the gamma rays. He is also the translator of Professor Tammann's States of Aggregation published by D. Van Nostrand in 1925.

Baldwin Acquires Cramp-Morris Properties

The Baldwin Locomotive Works has purchased the subsidiaries of Cramp-Morris Industries, Inc., which include I. P. Morris & De La Vergne, Inc.; De La Vergne Engine Company; Cramp Brass & Iron Foundries Company, all of Philadelphia, Pa.; the Federal Steel Foundry Company of Chester, Pa., and the Pelton Water Wheel Company of San Francisco, Cal.

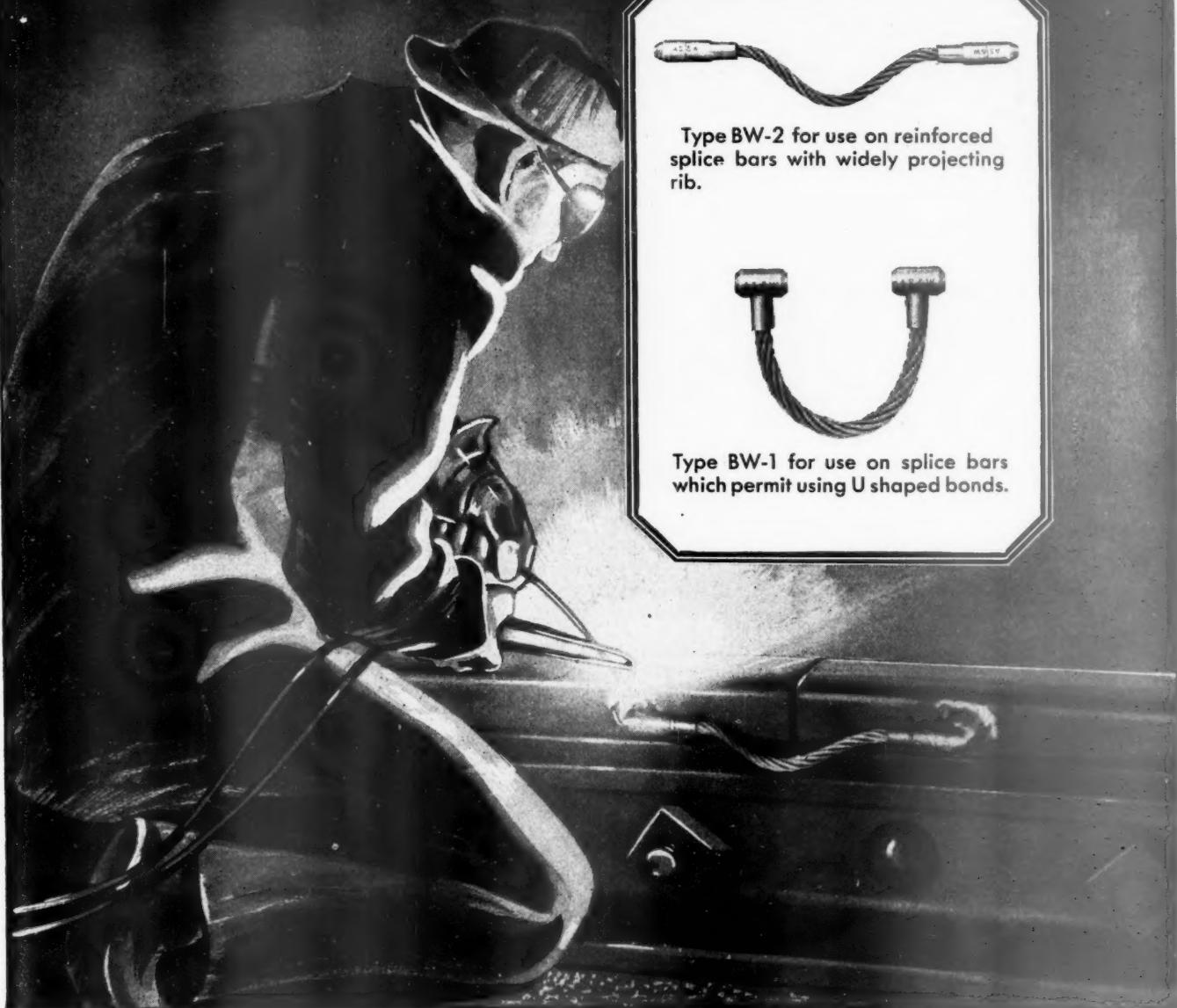
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TIGER WELD SIGNAL BONDS

THESE signal bonds are designed along new and improved lines. They enable the welder to make a perfect installation. For example—there are no wires to be welded on the job. This has already been done by the manufacturer.

The cylindrical solid steel terminal gives a large contact area and also enables the bond to be placed at any convenient angle. Installation can be made by either the oxy-acetylene flame with flux wire or by arcwelding with steel electrode. Write us for samples and detailed information.

A PERFECT WELD EVERY TIME



Type BW-2 for use on reinforced splice bars with widely projecting rib.



Type BW-1 for use on splice bars which permit using U shaped bonds.

1831



1931

AMERICAN STEEL & WIRE COMPANY

208 South La Salle Street, Chicago
Pacific Coast Distributors: Columbia Steel Company, Russ Building, San Francisco

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

And All Principal Cities
Export Distributors: United States Steel Products Company, New York

While plans for the disposition of the newly acquired properties have not yet been completed, a gradual absorption is contemplated and, where practicable, it is anticipated that machinery and assets will be removed to the Eddystone, Pa., plant, from which point all activities in the future will be directed.

With the transfer of its subsidiaries to Baldwin, the Cramp-Morris Company has divested itself of its major assets. The old William Cramp & Sons shipyard is not included in the deal and that property will continue in the process of liquidation. Prior to 1927 the companies just acquired by Baldwin were either subsidiaries or non-marine departments of the William Cramp & Sons Ship & Engine Building Company. In 1926 when the latter company decided to discontinue the building of ships, the subsidiaries and departments were placed under a holding company, Cramp-Morris Industrials, Inc.

H. Birchard Taylor, president of the Cramp-Morris properties, is expected to join the Baldwin group, and policies of conducting research and experimental work followed in the development of Cramp-Morris products will be carried on with increased facilities under Baldwin management.

I. P. Morris & De La Vergne, Inc., manufacturers of hydraulic turbine machinery, represents a consolidation of the I. P. Morris Company and the De La Vergne Machine Company, formerly of New York, but recently moved to Philadelphia and consolidated with the operations of the I. P. Morris Company. The De La Vergne Machine Company for many years designed and constructed refrigerating machinery and was one of the first concerns in the United States to develop Diesel engines. The Pelton Water Wheel Company designs and constructs hydraulic turbine machinery and valves; the Federal Steel Foundry Company specializes in high-grade commercial steel castings, and the Cramp Brass & Iron Foundries Company operates a cupola iron foundry, an electric iron foundry and one of the largest brass foundries in the United States.

OBITUARY

Samuel F. Kallenbaugh, sales manager of the **Morgan Engineering Company**, Alliance, Ohio, died on May 8.

E. A. S. Clarke, secretary of the American Iron & Steel Institute and formerly president of the Consolidated Steel Company and the Lackawanna Steel Company, died on May 15 at his home, Rumson, N. J., at the age of 69.

TRADE PUBLICATION

ELECTRIC HOISTS.—The Wright Manufacturing Company, Bridgeport, Conn., has issued a catalogue of 48 pages, which gives a complete description of Wright electric hoists, as well as dimensions and other useful data.

Construction

BEAUBARNOIS POWER CORPORATION.—In connection with railway crossings of this company's water power development on the St. Lawrence River canal, agreements have been signed with the New York Central and the Canadian National, for relocation of the New York Central's Adirondack division between mile posts 26.44 and 29.16, near Valleyfield, Que., and between mile posts 39.53 and 43.37, near Melocheville, Que., and of the Canadian National's St. Lawrence division between mile posts 41.55 and 45.57, near St. Louis, Que.

FT. WORTH & DENVER NORTHERN.—The Interstate Commerce Commission has authorized this company to proceed with the construction of its Childress, Tex., Pampa line, on condition that the Chicago, Rock Island & Gulf be given 120 days from the date of completion of that portion of the new F. W. & D. N. line extending south from Shamrock to a connection with the proposed Shamrock-Quanah line of the C. R. I. & G., south of Wellington, Tex., in which to acquire a half interest therein. The commission, on April 14, 1930, authorized the Chicago, Rock Island & Gulf to construct a line from its main line at Shamrock, south through Wellington to a connection with the St. Louis, San Francisco & Texas near Quanah, and denied the application of the Ft. Worth & Denver Northern for the construction of a line from Childress to Pampa via Shamrock and Wellington. Subsequently the latter line was authorized on condition that that portion between Shamrock and a point south of Wellington be jointly constructed and operated. Construction will now be undertaken independently by the F. W. & D. N., subject to joint operation upon the exercise by the C. R. I. & G. of the option described above and payment to the building road of one-half the cost of construction, plus interest.

GREAT NORTHERN.—A contract for track laying and ballasting for this company's new line between Klamath Falls, Ore., and Bieber, Cal., 89 miles, has been awarded to A. Guthrie & Co., Portland, Ore. This contract involves about 100 miles of track.

LOUISVILLE & NASHVILLE.—A contract for the construction of a reinforced concrete viaduct over the tracks of this company at Green Springs avenue, Birmingham, Ala., has been let to Adamson, Boylston & White, Birmingham.

MISSOURI PACIFIC.—A contract has been let to Winston Brothers Company, St. Louis Mo., for the construction of the substructure of the double track concrete and steel viaduct which will carry the railroad's tracks over Lockwood avenue at Webster Groves, Mo. The total cost of the project, \$70,000, will be borne by the Missouri Pacific, the County of St. Louis, and the St. Louis Public Service Company.

NEW YORK, NEW HAVEN & HARTFORD.—This company has authorized the elimination of a grade crossing at Broadway, North Haven, Conn., at an estimated cost of \$86,542, and has also authorized certain repairs to Atlas Wharf, B.F.T., Boston, Mass., to cost approximately \$52,314. A contract has been awarded to the Boston Bridge Works, Boston, for the reconstruction of bridge 14.00, Washington R. I. This work, although estimated to cost \$29,450, will be done on a unit price basis.

NORFOLK & WESTERN.—This company and the Big Sandy & Cumberland have applied to the Interstate Commerce Commission for authority to construct a cutoff of two-thirds of a mile, including a tunnel of 1,580 ft., in the vicinity of Devon, W. Va., to take the place of a three-mile line around a mountain.

READING.—The Interstate Commerce Commission has authorized this company to construct, at an estimated cost of \$70,000, an extension of its Helfenstein branch from Bickel Colliery west to Doutyville, Pa., 4.75 miles. Construction is to be begun on or before July 1, and completed by December 31, 1931.

SOUTHERN PACIFIC.—The engineer of the State Highway Commission of California receives bids until May 27 for the construction of a highway subway under the tracks of this company near Henderson, Cal.

VIRGINIAN.—This company receives bids until May 27 for the construction to sub-grade, except superstructure for steel bridges, of section F of the Guyandot line of the Virginian & Western, a Virginian subsidiary. The section for which bids are being taken is an extension from mile post 33.0 to mile post 39.38, of a line being constructed along the Guyandot river in Wyoming and Mingo counties, W. Va., to provide a connection between the Virginian at Elmore, W. Va., and the Chesapeake & Ohio at Gilbert. Its construction will require the boring of three tunnels, substructures for two river bridges and necessary channel changes, all of which are included in the present bids.

P. R. R. Plans for New Passenger Facilities at Newark

Plans for the Pennsylvania's new Market Street station in Newark, N. J., as agreed upon by city and railroad representatives, in accordance with the recent announcement of the railroad's intention to speed up its general improvement program, indicate that the new structure is to be complete and conveniently arranged to serve not only Newark, but also its tributary territory, as an additional Pennsylvania terminal in the Metropolitan district. The new station, which replaces the present Market Street station, and the station at Manhattan Transfer, will be served by the main line trains of the Pennsylvania and by an extension of the downtown New York service from Hudson Terminal, thereby making Newark the point of transfer from downtown New York to through trains to the West and South. In addition to these facilities there will

Continued on Next Left Hand Page

Alloys are Allies of Progress

What would our grandfathers say of this age of roads in the sky, ice by wire and pictures that talk? Alloy irons and steels, little dreamed of 30 years ago, have made possible the modern airplane, automobile and other wonders of our present day.

The skillful alloying of metals has also played an important part in the development of Toncan Culverts. Toncan has always been of commercially pure iron analysis—in 1921 copper was alloyed with the pure iron—and still later the pure iron base alloyed with a much larger copper content, plus Molybdenum! The addition of these metals has greatly intensified the resistance of Toncan Culverts to soil, water, and atmospheric corrosion. Truly, Alloys are Allies of Progress.

1900 and—
Open Hearth Steel

1910 and—
Pure Iron

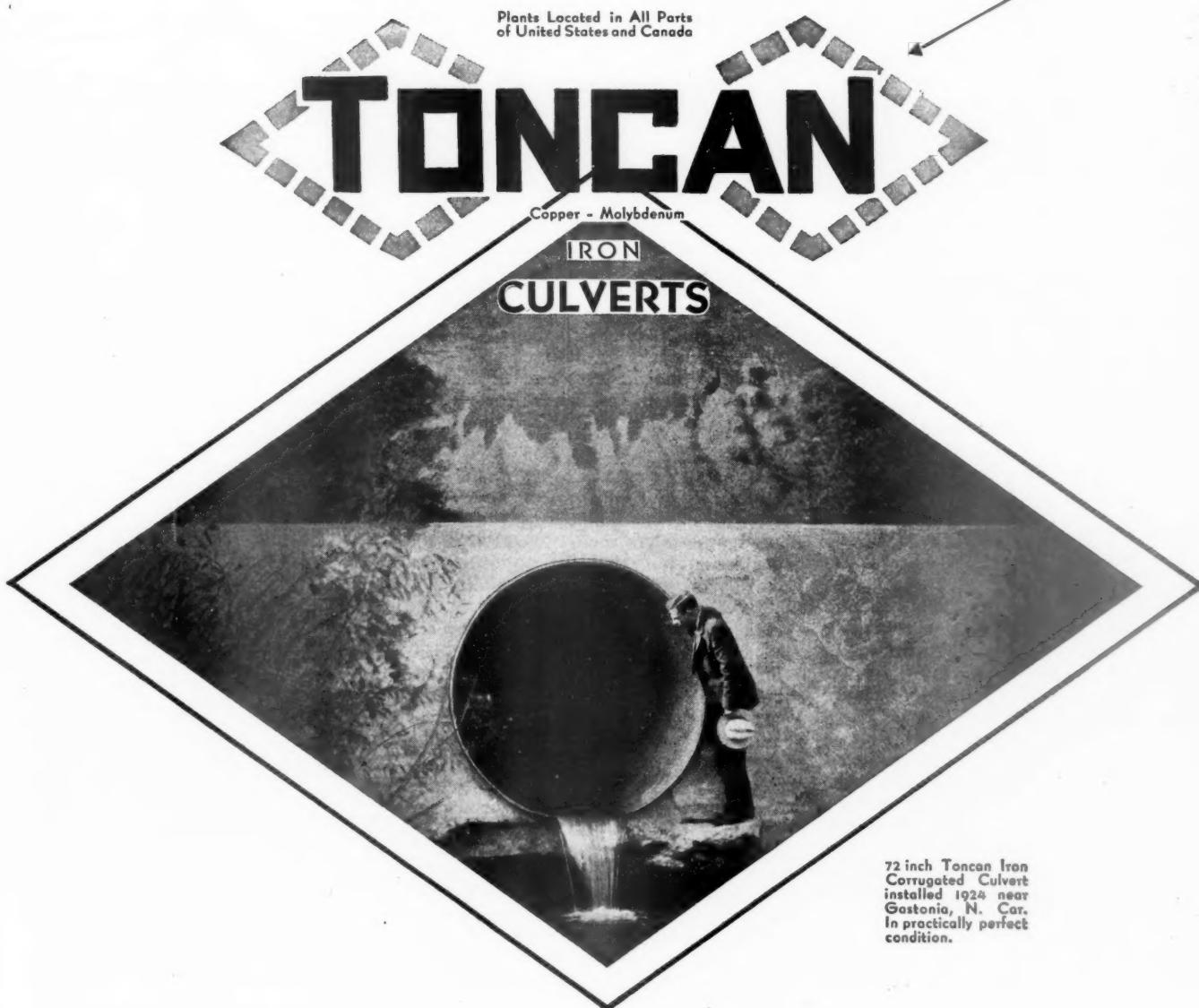
1920 and—Copper
Bearing Pure Iron

1930 and—

TONCAN CULVERT
MANUFACTURERS' ASSOCIATION
MASSILLON, OHIO

Plants Located in All Parts
of United States and Canada

Copper - Molybdenum
IRON
CULVERTS



72 inch Toncan Iron
Corrugated Culvert
installed 1924 near
Gastonia, N. Car.
In practically perfect
condition.

be included in the station the terminus of the new Newark City Railway subway, bus facilities, and a large covered driveway space for taxicab and private automobiles.

The station will front on the new Raymond Plaza West, and will extend from Market street to the new Raymond boulevard with a frontage along the Plaza of 775 ft. and a depth of 319 ft. The main entrance will be upon the axis of Commerce street and will lead directly into the waiting room and from there to the main concourse, from which access will be provided to the through passenger platforms above. A separate entrance will lead to another concourse from which direct access will be provided to the Pennsylvania Rapid Transit service for downtown New York. Ramps lead from this concourse to bus platforms, and access may also be had to the city subway terminal located under the station.

The principal front of the station will be of classical design with a central archway flanked by square piers. The viaduct platform enclosures on each side of the station will be faced with limestone with decorative arched bridges at Raymond boulevard and Market street. The principal feature of the interior will be the main waiting room, 186 ft. long, 58 ft. wide and 50 ft. high, containing ticket offices, information bureau, telegraph offices, newsstands, etc. An archway in the center of the waiting room will lead to the main concourse, 45 ft. by 222 ft., connected by transverse corridors to the concourse serving the rapid transit trains and the taxi driveway. Between the two concourses and accessible to both, will be baggage and parcel checking facilities, toilet facilities and barber shop. Adequate dining room and luncheon facilities will be provided.

To clear the site of the new station it will be necessary to relocate the facilities of the Railway Express Agency at this point, and work will start soon on a new express terminal to be located on railroad property on the southerly side of Poinier street at the head of Broad street. The new terminal will be much larger than the old one and will consist of a steel and brick structure occupying an area 77 ft. by 587 ft. The northerly end will be two stories in height, to house the office force of the Express Agency, while the rest of the structure will be one story. There will be two tracks with a covered platform along one side of the house, and on the other side there will be space for backing trucks up to the platform. The driveway along the trucking side of the house will be roofed over to a width sufficient to accommodate the longest trucks when backed against the platform, and enclosed by rolling doors, so that trucks can be closed in during the night and loaded for delivery early the next morning. At the southerly end of the express terminal it is proposed to construct a garage 73 ft. by 155 ft. for housing the trucks of the Express Agency and to provide facilities for repairing them.

Financial

ALABAMA, TENNESSEE & NORTHERN.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue \$403,000 of prior lien mortgage 6 per cent bonds to be pledged and repledged from time to time as collateral security for short term notes.

ALTON & SOUTHERN.—*Excess Income.*—Division 1 of the Interstate Commerce Commission, in a tentative recapture report, finds that this company in the years 1921 to 1927 earned \$412,557 in excess of 6 per cent on its valuation.

ATCHISON, TOPEKA & SANTA FE.—*Operation.*—The Interstate Commerce Commission has authorized the Panhandle & Santa Fe to operate, for the account of the Atchison, Topeka & Santa Fe, over the Elkhart & Santa Fe from the Texas-Oklahoma state line northwesterly to Boise City, 22.5 miles.

ATCHISON, TOPEKA & SANTA FE.—*Securities.*—The Interstate Commerce Commission has authorized the Pecos & Northern Texas to issue \$490,000 of capital stock and a general mortgage 6 per cent, series A, bond for \$9,000,000, both to be delivered to the Atchison, Topeka & Santa Fe in satisfaction of indebtedness. The commission has also authorized the Eldorado & Santa Fe to issue a 6 per cent, series B, bond for \$1,100,000 to be delivered to the A. T. & S. F. in satisfaction of indebtedness.

ATCHISON, TOPEKA & SANTA FE.—*Securities of Clinton-Oklahoma-Western.*—The Interstate Commerce Commission has authorized the Clinton-Oklahoma-Western to issue \$248,000 of capital stock and a first mortgage 6 per cent, series B, bond for \$300,000, the bond and \$148,000 of the stock to be delivered to the Atchison, Topeka & Santa Fe in satisfaction of indebtedness and \$100,000 to be delivered in exchange for a like amount of the C-O-W's outstanding stock.

CANADIAN PACIFIC.—*Acquisition.*—Examiner M. S. Jameson of the Interstate Commerce Commission in a proposed report has recommended that the commission find that the acquisition of control of the Aroostook Valley by the Canadian Pacific would be in the public interest but that the price proposed to be paid to former United States Senator Arthur R. Gould, of Maine, \$264.87 per share for 2,000 shares of stock, is too high for stock that has never paid a dividend, and that an order be deferred until a modified proposal has been submitted. The company proposed to purchase the stock at a price representing the equity in the stock based on a fair value determined by agreement or arbitration. Two of three arbitrators found a valuation representing a price of \$264.87 while the Canadian Pacific arbitrator held that this was \$120 too high. Various engineering appraisals were submitted at the hearing ranging from \$147 to \$449 per share for the stock.

CHICAGO & ALTON.—*Receivers Notes.*—The Interstate Commerce Commission has authorized the receivers of this company to issue \$1,500,000 of 4½ per cent notes, the proceeds to be used for the payment of taxes, interest and dividends on securities of leased lines, to make advances to a subsidiary elevator company and to pay maturing equipment trust certificates.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon a branch line extending from Lindsey, Wis., to Lynn, 6.7 miles.

CHICAGO, ROCK ISLAND & PACIFIC.—*Lease.*—This company has applied to the Interstate Commerce Commission for authority to operate under lease a line of the St. Paul & Kansas City Short Line between Coburn and Birmingham, Mo.

CHICAGO, SPRINGFIELD & ST. LOUIS.—*Sale recommended.*—The sale of this road and the Jacksonville & Havana to the highest bidder, at public sale, has been recommended by W. St. Johns Wines, master in chancery, in reports filed with the United States district court at Springfield, Ill. Both were once part of the defunct Chicago, Peoria & St. Louis. Master Wines reported that the Chicago, Springfield & St. Louis now owes approximately \$500,000, and \$80,000 interest, on outstanding bonds, and that the Jacksonville & Havana owes \$300,000 and \$45,000 interest on outstanding bonds.

DELAWARE & HUDSON.—*Abandonment.*—Examiner O. D. Weed of the Interstate Commerce Commission has recommended in a proposed report that the commission authorize this company to abandon part of its Honesdale branch, from Racket Brook to Honesdale Junction, Pa., 23.62 miles.

MINNEAPOLIS & ST. LOUIS.—*Receivers Certificates.*—The Interstate Commerce Commission has authorized the receiver for this company to issue or extend \$1,200,000 of receivers' certificates bearing interest at not more than 8 per cent. The interest rate on certificates now outstanding ranges from 5 to 6½ per cent.

Receivers Notes.—The commission has also authorized the receiver to issue 96 promissory notes for \$2,464.66 each to be delivered to the General American Tank Car Corporation in connection with the procurement of equipment.

NEW YORK CENTRAL.—*Acquisition.*—The Interstate Commerce Commission has authorized the Toledo & Ohio Central to acquire that part of the Zanesville & Western from East Columbus, Ohio, northwesterly to the end of track in Mifflin township, 2.4 miles. Authority to acquire from the Kanawha & Michigan property owned jointly with it between Corning, Ohio, and North Corning, has been denied.

ONTONAGON.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon as to interstate and foreign commerce its entire line of railroad, 6.4 miles, extending from Ontonagon, Mich., westerly to Green-



BETTER FIRES

FIREBAR CORPORATION
CLEVELAND OHIO.

ST. LOUIS-SAN FRANCISCO.—*New Directors Elected.*—George S. Franklin, of Cotton & Franklin, New York; Walter E. Hope of Masten & Nichols, New York; Percy H. Johnston, president of the Chemical Bank & Trust Co., New York, and Edward G. Wilmer of Philadelphia, Pa., have been elected directors of this company to succeed E. G. Frank and C. W. Michael of New York, E. V. R. Thayer of Chicago and R. E. L. Wilson of Wilson, Ark.

SEABOARD AIR LINE.—*Receivers Certificates.*—The Interstate Commerce Commission has authorized the receivers of this company to issue \$4,000,000 of series A receivers' certificates bearing interest at 5 per cent to be sold at 98½ to Dillon Read & Company and Ladenburg, Thalmann & Company.

TENNESSEE & NORTH CAROLINA.—*Control of Smoky Mountain.*—The Interstate Commerce Commission has authorized this company to acquire control under lease of an additional 1.2 miles of the line of the Smoky Mountain in Sevierville, Tenn.

TEXAS & PACIFIC.—*New Directors Elected.*—Frank Altschul, of Lazard Freres, New York, and Henry G. Dalton, of Pickands, Mather & Co., Cleveland, Ohio, have been elected directors of this company.

UNION PACIFIC.—*New Director Elected.*—L. J. Tracy, controller of the Union Pacific at New York, has been elected a member of the board of directors, succeeding Charles A. Peabody, deceased. Mr. Tracy has also been elected a director of the Oregon Short Line and the Los Angeles & Salt Lake.

Dividends Declared

Alabama Great Southern.—Common, \$2.00, semi-annually; Common Extra, \$1.50, both payable June 29 to holders of record May 25; Preferred, \$2.00, semi-annually; Preferred Extra, \$1.50, both payable August 15 to holders of record July 10.

Cincinnati, New Orleans & Texas Pacific.—Common, \$4.00, payable June 24 to holders of record June 5.

Missouri Pacific.—Preferred, \$1.25, quarterly, payable July 1 to holders of record June 12.

Texas & Pacific.—Common, \$1.25, quarterly, payable June 30 to holders of record June 12.

Union Pacific.—Common, 2½ per cent, quarterly, payable July 1 to holders of record June 1. Wheeling & Lake Erie.—7 Per Cent Prior Lien, \$7.00, quarterly, payable June 2 to holders of record May 28.

Average Prices of Stocks and of Bonds

	May 19	Last week	Last year
Average price of 20 representative railway stocks.	65.43	73.06	127.00
Average price of 20 representative railway bonds.	91.63	92.76	93.76

Valuation Reports

The Interstate Commerce Commission has issued final valuation reports finding the final value for rate-making purposes of the property owned and used for common-carrier purposes as of the respective valuation dates as follows:

Munising, Marquette & Southeastern	\$3,034,784	1916
Peoria & Pekin Union	5,105,882	1919
Union Railroad (Pittsburgh)	15,905,000	1917
Bessemer & Lake Erie (owned)	10,233,000	1916
(used)	28,138,988	

Railway Officers

EXECUTIVE

I. B. Tigrett, president of the Gulf, Mobile & Northern, with headquarters at Mobile, Ala., has been also elected president of the New Orleans Great Northern.

T. J. Maloney, general manager of the Chicago, West Pullman & Southern, has been appointed president of that road, succeeding H. B. Utley, deceased. J. E. Ryan, auditor, has been appointed vice-president. Both will have headquarters at Chicago, Ill.

OPERATING

G. A. Hoag, assistant superintendent on the Belleville division of the Canadian National at Trenton, Ont., has retired from active service and the position has been abolished.

J. P. Cranford, supervising agent on the St. Louis division of the Pennsylvania, has been appointed assistant trainmaster and division operator of the Grand Rapids division.

The Beaumont division of the Southern Pacific lines in Texas and Louisiana has been renamed the Houston division and the name of the former Houston division has been changed to the San Antonio division.

K. M. Post, assistant to the president of the St. Louis Southwestern, with headquarters at St. Louis, Mo., has been appointed general superintendent, with headquarters at Tyler, Tex., succeeding W. E. McGraw, who resigned on May 20. A biographical sketch of Mr. Post's railway career and a reproduction of his photograph appeared in *Railway Age* on February 1, 1930, page 365, at the time of his promotion to assistant to the president. G. B. Matthews, assistant to vice-president, operation, at St. Louis, has been appointed superintendent of transportation at Tyler, succeeding W. Mosby, who has been assigned to other duties.

W. C. Givens has been appointed assistant superintendent of the Chicago Terminal division of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Bensenville, Ill., succeeding C. E. Elliott, who has been promoted to superintendent of the Milwaukee Terminal division, with headquarters at Milwaukee, Wis. Mr. Elliott replaces Harry F. Gibson, who has been transferred to the La Crosse & River division, with headquarters at La Crosse, Wis. J. H. Hennessy has been appointed trainmaster of the La Crosse & River division. O. H. Frick, division superintendent of the La Crosse & River division, with headquarters at La Crosse, has been appointed general manager of the

Chicago Union Station Company, with headquarters at Chicago, a newly created position. The creation of the position of general manager was accompanied by the abolition of the operating committee which was composed of C. L. Whiting, superintendent of the Chicago terminals of the Milwaukee, R. D. McKeon, superintendent of the Chicago Terminal division of the Pennsylvania, and J. P. Falk, superintendent of the Chicago division of the Chicago, Burlington & Quincy.

J. J. Franco, general superintendent of transportation of the National of Mexico, has been appointed general superintendent of the newly created Southern district, with headquarters as before at Mexico, D. F., and the position of general superintendent of transportation has been abolished. The entire railroad has been divided into two general superintendent's districts, the Southern, with jurisdiction over all lines south of Irapuato, Gto., San Luis Potosi, S. L. P., and Tampico, Tams., and the Northern, with jurisdiction over all lines north of those points. David S. Alonso, assistant to the general superintendent of transportation, with headquarters at Mexico City, has been promoted to general superintendent of the Northern district, with headquarters at Monterey. N. L. Alfonso E. Plancarte, assistant general superintendent of transportation, has been appointed superintendent of the Mexico City terminals. The office of superintendent of car service has been transferred to the jurisdiction of the vice-president and general manager. The department of sleeping and special cars has been placed under the jurisdiction of E. G. Castrejon, who is in charge of train auditors, with headquarters at Buenavista station, Mexico City. A. E. Vera, superintendent of the Durango division at Durango, Dgo., has been transferred to the Puebla division, with headquarters at Puebla, Pue., succeeding Jose Diaz Leal, who has been assigned to other duties.

TRAFFIC

Elbert L. Whitney, general coal and ore agent of the New York Central west of Buffalo, with headquarters at Cleveland, Ohio, has been promoted to freight traffic manager at Chicago. Leroy Blue, assistant general freight agent at Toledo, Ohio, has been transferred to Chicago. C. F. Swisher, division freight agent at Kankakee, Ill., has been promoted to assistant general freight agent at Toledo, to succeed Mr. Blue. R. L. Milbourne has been appointed general agent, live poultry traffic, at Chicago. Joseph R. O'Malia, assistant general coal and ore agent at Cleveland, has been promoted to general coal and ore agent, succeeding Mr. Whitney.

Mr. Whitney was born at Columbus, Ohio, on October 18, 1874. He entered railway service as an office boy on the Baltimore & Ohio at Columbus, then occupying various clerical positions until 1900, when he became chief clerk in the traffic department of the Toledo, St.



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service, is attested by the companies' repeat order for 58 additional White Busses.

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Louis & Western (now part of the New York, Chicago & St. Louis), at Toledo, Ohio. Three years later he was advanced to commercial agent at Detroit, Mich., and from 1904 to 1908 he conducted a traffic service for shippers. In the latter year Mr. Whitney re-entered railway service on the Pittsburgh & Lake Erie, being appointed chief clerk to the assistant freight traffic manager of the New York Central at Chicago in 1910. He advanced through various positions in the traffic department and on May 1, 1920, he was promoted to assistant general freight agent at Chicago. On October 1, 1922, Mr. Whitney became assistant to the vice-president of the Indiana Harbor Belt, the Chicago Junction and the Chicago River & Indiana, with headquarters at Chicago. He was appointed general coal and ore agent of the New York Central at Cleveland, in November, 1928, the position he held until his recent appointment.

Harry F. Cary, who has been promoted to assistant passenger traffic manager of the Southern, with headquarters at Cincinnati, Ohio, has been in the service of that railroad for 36 years. He was born at Augusta, Ga., on November 28, 1874, and attended the Houghton Institute and the Central Grammar school at Augusta. Mr. Cary began his business career as cashier for a merchant at Augusta in 1886, and later he served successively as a clerk and stenographer for the Bradley Fertilizer Company at Augusta and as a stenographer for the International Ex-



Harry F. Cary

position at Atlanta, Ga. He obtained his first railway experience in 1895 with the Southern. From 1898 to 1909 he served successively as traveling passenger agent at Atlanta, Ga., and Macon, district passenger agent at Jacksonville, Fla., chief clerk in the general passenger department at Washington, D. C., and assistant general passenger agent at the latter point. He was then promoted to general passenger agent at Washington, where he remained until 1926, when he was transferred to Cincinnati. Mr. Cary's promotion to assistant passenger traffic manager became effective on April 15.

MECHANICAL

The title of **Hugh Ronalds**, master mechanic of the Lehigh & New England, with headquarters at Pen Argyle, Pa., has been changed to superintendent of motive power.

H. W. Reinhart, assistant superintendent of motive power of the Chicago Great Western, has been promoted to superintendent of motive power, with headquarters as before at Oelwein, Iowa, succeeding **E. J. Brennan**, who retired from active service on May 1.

John Horrigan, who retired on May 1 as superintendent of motive power of the Elgin, Joliet & Eastern, with headquarters at Joliet, Ill., has been connected with that railroad for more than 36 years, 32 of which were as superintendent of motive power. He was born at Mendota, Ill., on June 23, 1860, and attended the public schools at Marshalltown, Iowa. He entered railroad service in 1877 as a machinist apprentice on the Iowa Central (now part of the Minneapolis & St. Louis). Later he was advanced successively through the posi-



John Horrigan

tions of machinist, roundhouse foreman and division master mechanic at Keensburg, Ill. On May 1, 1893, Mr. Horrigan became roundhouse foreman on the Chicago, Rock Island & Pacific at Blue Island, Ill., and in the following year he was appointed master mechanic on the Elgin, Joliet & Eastern at Joliet. He was promoted to superintendent of motive power on May 15, 1899, a position he occupied continuously until his retirement.

ENGINEERING AND SIGNALING

W. Bretschneider, division engineer of the Terminals division of the Southern Pacific lines in Texas and Louisiana, has been appointed assistant division engineer of the Houston division, with headquarters as before at Houston, Tex., following the consolidation of the Terminals division with the Beaumont division, and the changing of the name of the latter to the Houston division.

The jurisdiction of **Julian Montanez**, division engineer of the Torreon division of the National of Mexico, with headquarters at Torreon, Coah., has been extended to include the Chihuahua division, following the consolidation of the two divisions on May 1. The jurisdiction of **Carlos Corral**, division engineer of the Aguascalientes division, with headquarters at Aguascalientes, Ags., has been extended to include the Durango division, following the consolidation of those divisions on May 1.

OBITUARY

C. V. Coulter, formerly district store-keeper of the Cleveland, Cincinnati, Chicago & St. Louis, died at his home in Indianapolis, Ind., May 12, after a short illness.

Glenn E. Couse, assistant general agent, operating department, of the Pennsylvania at Detroit, Mich., died at Grace hospital in that city on May 14, following a brief illness. Mr. Couse, who was 54 years of age, had been assistant general agent at Detroit since July 1, 1923, and immediately prior to that time was assistant to the real estate agent at Detroit.

Andrew J. Kerfoot, former general manager of the Jonesboro, Lake City & Eastern (now part of the St. Louis-San Francisco), died at Los Angeles, Cal., on May 11. Mr. Kerfoot, who was a native of Martinsburg, W. Va., served in train service on the Missouri-Kansas-Texas, the Houston & Texas Central and the Chicago & Alton from 1875 to 1890 and was then appointed superintendent of the St. Louis, Kennett & Southeastern (now part of the Frisco). He was general manager of the J. L. C. & E. from 1897 until his retirement from railway service in 1911.

Albert J. Farrelly, who retired as electrical engineer of the Chicago & North Western, with headquarters at Chicago, on May 1, 1927, died on May 14 at Newaygo, Mich., after a brief illness. Prior to his retirement from active duty Mr. Farrelly had been in the service of the North Western for nearly 50 years, 28 of which had been spent as electrical engineer. He was born on April 9, 1857, at Meadville, Pa., and attended public schools and high school at Chicago. In 1874 he became a time-keeper for a brick manufacturer at Chicago and two years later he was engaged as telegraph operator with the Metropolitan Telegraph Company. Mr. Farrelly entered railway service in 1878 as a telegraph operator on the North Western. Two years later he became a locomotive fireman and from 1884 to 1892 he served at various points as station agent and telegraph operator. He was then promoted to chief engineer of the power plant of the Chicago passenger station, being promoted to electrical engineer in 1899. He was the first president of the Association of Railway Electrical Engineers.